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April 1908

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Educational Opinion.

THE CHILD AND ITS CHAMPIONS.

MR. PUNCH. "Gentlemen, these children want a better education. Can't you help them?"

ANGLICAN, NONCONFORMIST, ROMAN CATHOLIC. "Don't interrupt us. We're busy fighting!"

(By kind permission of the Proprietors of "Punch.")

❧ ❧ ❧

WE understand that the exact terms of the proposed Moral Instruction amendment to the Education Bill are as follows:—

Moral Instruction.

1. In every public elementary school systematic moral instruction shall be given on at least one day a week.

2. Instruction given under this section shall be given during the time ordinarily set apart for religious instruction (if any) given in the school, subject to the provision of Section 14 of the Elementary Education Act, 1870.

3. One of the conditions required to be fulfilled by every public elementary school, in order to obtain a Parliamentary grant, shall be that efficient instruction of the kind prescribed by this section is given in the school.

4. Instruction given under this section shall be subject to inspection by the Local Education Authority and the Board of Education, and shall not be deemed to be instruction in religious subjects or in religious knowledge within the meaning of Section 7 of the Elementary Education Act, 1870.

It seems a modest request—one half-hour's morality per week. We had, however, understood that the Moral Instruction League aimed at stepping in where religion has been abandoned. The second section of the above seems to rank the Moral with the Secular Instructors.

❧ ❧ ❧

TEACHERS all the world over will have been thrilled with pity and horror at the news of the fearful destruction of child life in the school fire near Cleveland. From that form of disaster schools in this country have been happily free, though there have been dreadful accidents to children in buildings of other types. And all will admit to a high place in the roll of unselfish heroes the names of the teachers of the Lake View School who died at their posts, true to the last to the charge which had been entrusted to them. The name "hero" is nowadays all too lightly bandied about, but surely no word but "heroic" is fitting for the conduct of those who, in circumstances of swift, paralysing horror, took no thought for themselves, but met death while in the act of saving helpless little ones. They rest from their labours, and their works do follow them.

The Lake View Disaster.

❧ ❧ ❧

WHILE honouring them, we cannot help noting two things which help to explain such an event. In America wood is much more freely used for constructional purposes than in England, and in the country districts it is often the only material available. Then, as the climate of America is continental, and great extremes are experienced, a habit has arisen of heating, not only houses, but all public buildings, to a temperature which is to the ordinary Englishman almost unbearable. Open fires are seldom used, but a furnace in the basement supplies the heat, which is distributed by flues and coils. When buildings, largely made of wood, are heated for many months together to a temperature of 80° or even 85°, the whole structure becomes one large, overdried tinder-box; and should the undesirable thing happen, it becomes a raging furnace with appalling rapidity—a circumstance which is always to be noted in the account of any American fire disaster.

Overheated Schools.

❧ ❧ ❧

WITHOUT attempting to analyse the "Statistics of Public Education in England and Wales" just issued from Whitehall, we cull a few items which are of first-rate interest. The children in the schools number more than 7,000,000, roughly divided in two portions, of which the larger is in Council schools. To teach this army there are nearly 175,000 teachers, in which the certificated women are twice as numerous as the men, and in every other class they outnumber the men altogether. The budget of the schools for last year was close upon £20,500,000, a stupendous amount, spent wholly on primary education. One fact which stands out from the figures is gratifying. The number of children in school under the age of five is growing less, whilst that over the age of fifteen is growing larger. This is in every way as it should be. The growth of the educational work of the country is almost incredible when compared with the same work in 1870. How much more so when compared with the beginnings of things in the early 'thirties?

Last Year's Statistics.

❧ ❧ ❧

WHAT schoolboy does not know and anticipate Pancake Day? But how many will agree that the eating of the "flip-jack," or "ominous incantation,"

makes them "forgetful either of manners or humanitie"? Listen to good Master John Taylor, commonly called the water poet, who died in 1654, on the subject of the flip-jack:—

Shrove Tuesday and Flip-Jacks.

"Shrove Tuesday, at whose entrance in the morning all the whole kingdom is inquiet; but by that time the clock strikes eleven, which (by the help of a knavish sexton) is commonly before nine, then there is a bell rung, cal'd the pancake bell, the sound whereof makes thousands of people distracted, and forgetful either of manners or humanitie; then there is a thing called wheaten floure, which the cookes do mingle with water, egges, spice, and other tragical, magicall enchantments; and then they put it, by little and little, into a frying-pan of boiling suet, where it makes a confused dismall hissing (like the Lernean snakes in the reeds of Acheron, stix, or phlegeton), untill at last, by the skill of the cooke, it is transformed into the forme of a flip-jack cal'd a pancake, which ominous incantation the ignorant people doe devoure very greedily."

DINIZULU is very much in evidence just now on posters and in news paragraphs, and this makes all the more interesting a few particulars which we extract from the recently-issued report on native education in Natal. The thought of Zulus being educated in boarding-schools, learning domestic subjects and laundry work, is a little quaint at first. When we consider what is the character of that warlike race, it is a little difficult to reconcile the management of assegais and shields, and all the other accoutrements of the former subjects of Dingaan and Cetewayo, with the use of the wash-tub and mangle. But so it is. Native schools receiving aid in grants number 170, of which 30 are boarding-schools; and laundry work and agriculture are among the things studied. It looks as if education would cause the Zulus literally to "beat their spears into pruning-hooks."

Zulus and the Wash-tub.

A COMMON gibe at the older English universities used to be that men went up to them to "have a good time" or to form social connections, rather than to "scorn delights and live laborious days" in the pursuit of knowledge. Hard and fast partisans of Oxford and Cambridge declared that this was untrue; but, alack, figures, like photographs, are at times unflattering. From statistics compiled by Mr. J. A. Venn of Trinity College, Cambridge, it appears that during 1902–1906 20·8 per cent. of the alumni of Cambridge were anything but devotees of the midnight oil, for during that period 46·3 per cent. took degrees in honours, 32·9 per cent. a pass or "poll" degree, and—*incredibile dictu!*—20·8 per cent. took nothing at all. If one-fifth of the dwellers by the Cam during five consecutive years obtained no tangible evidence of their frequenting those learned retreats, ill-natured people may be tempted to believe the gibe before-mentioned true. It is not a little significant that Trinity and Trinity Hall, famous in boating annals, show 24·7 per cent. and 47·6 per cent. of "wasters" during this period.

'Varsity Wasters.

COLLEGIATE and inter-collegiate athletics continue to exercise the minds of Americans, and a most interesting article by Dr. L. H. Gulick in the February number of the *American Physical Education Review* throws a flood of light on the reason for the agitation. Put briefly, it seems that veiled professionalism is the order of the day. Promising athletes are watched in the secondary schools, and are kept at college by private enthusiasts with a view to maintaining the supremacy of the particular college in athletics. This seems to us to debase and destroy the sportive instinct, for it puts the amateur—that is, the *lover* of sport—out of court at once. The extent to which it is carried can be judged from the following statement by Dr. Gulick: "In one of our insular possessions a young man, a native of the land, with hardly any preliminary training, ran 100 yards in ten and two-fifths seconds. He is now studying in this country on a Government scholarship, and, so far as we know, that is the only thing that made anybody think of him as a desirable scholarship man."

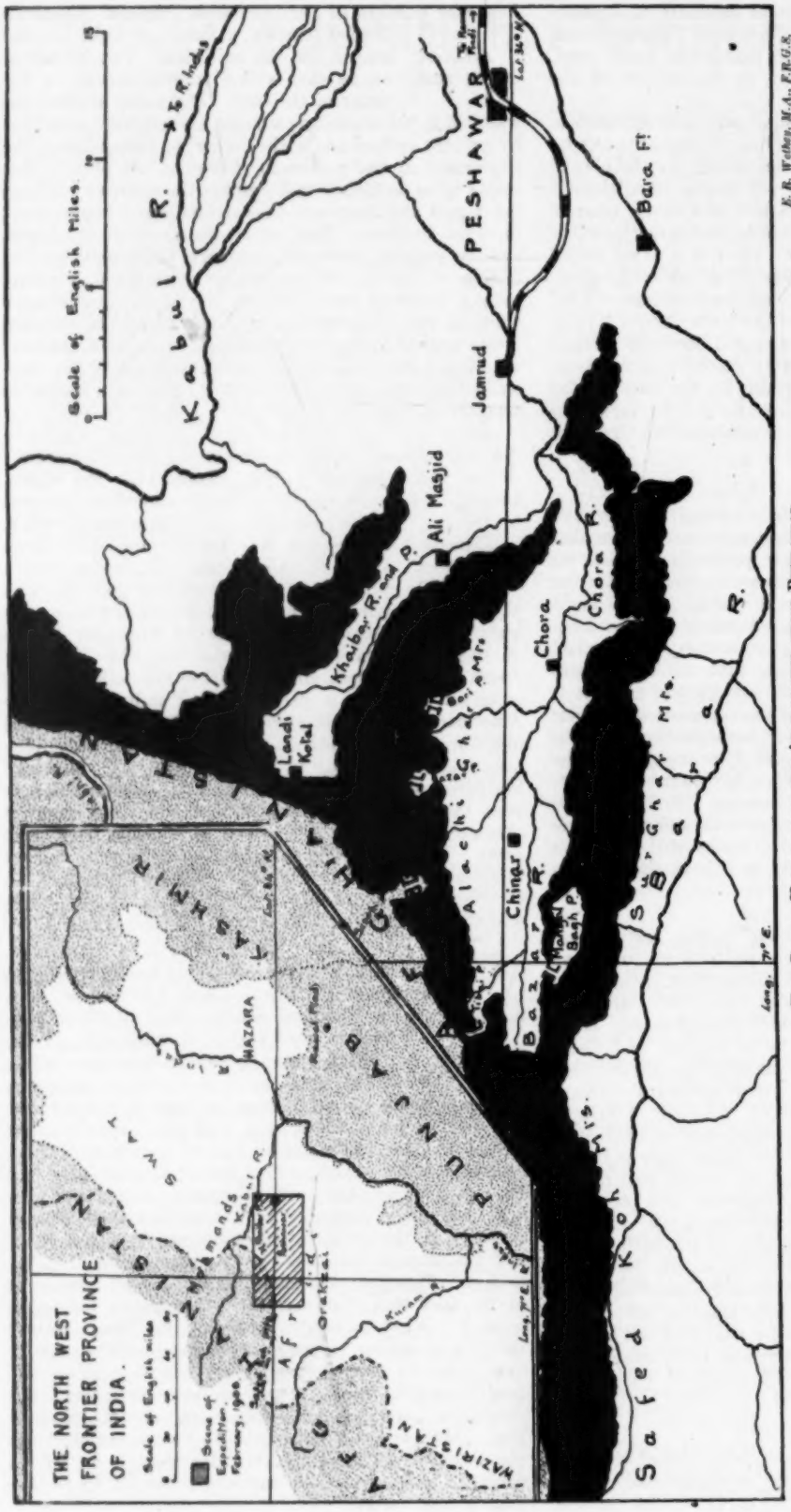
Athletics run mad.

IF this be true, it puts the cricket or football "master" of some English public schools into the shade. Instead of sport at college being a rational amusement and a healthy physical stimulus for all, it degenerates into the keeping of a college stud of athletes, and the feeling which prompts it is that of the gambler who plays only to win, and will stand at nothing to ensure his personal success. An address by President Jordan of Stanford University, reported in the February *Journal of Education*, does not spare the colleges. "It is about time for a declaration of independence by American colleges and universities. Excepting Harvard and Cornell, practically all the large universities employ questionable methods in securing athletes. Michigan has hired professionals. Eckersall of Chicago failed to pass the entrance requirements of the University of Wisconsin, yet he was received at Chicago with open arms. Yale and Chicago give scholarships to men of athletic ability. Yale furnishes athletes with agencies for cigarettes and tobacco. Sub-agents do the work, and the athlete draws the salary." *Proh! Pudor!*

Curious Practices.

WE are always receiving something fresh or startling from America. The *Journal of Education* has a cutting note on President Stanley Hall of Clark University, well known on both sides of the "ditch," who is reported to have said: "The time has come for a movement in favour of men's rights. There has been a thirty-years' war for women's rights, and now the pendulum has swung too far. This is an age of over-feminisation, especially in the schools. Men should be principals, and have men under them. With women under them men are becoming 'sissies.' By the presence of women teachers in the public schools flogging has gone out, and the effeminate 'sissy' boy is honoured and called perfect. This does not make for manhood." It ought to be said that "principal" is American for head-teacher. What an awful prospect for headmasters! But if men cannot be got to come and staff the schools, how is one to avoid becoming a "sissy"? With this bold statement about "over-feminisation" and "the pendulum," we look for a sultry time for Mr. Stanley Hall. He has one compensation—he has enriched our vocabulary with a new term; for though we by no means subscribe to his statement, we all know the man who is "sissy."

"Sissies."



E. R. Wethey, M.A., F.R.G.S.

THE BAZAR VALLEY AND ITS APPROACHES FROM PESHAWAR.

The scene of operations against the Zakka Khel tribe of Afridis, Indian punitive expedition of February 1908. The district is shown in the inset thus ■

GEOGRAPHY NOTES UP-TO-DATE.

BY E. R. WETHEY, M.A., F.R.G.S.

THE ZAKKA KHEL AFRIDIS.

THE shortest punitive expedition in our Indian frontier annals deserves a passing note, if only to rub up our geography of the outlying borders on the north-west of the great dependency.

A glance at the inset map shows the locale, well in the centre of the North-West Frontier Province. This is the province which in 1901 was partly carved out of the Punjab and partly formed of a number of "political charges" lying west of the Indus. In area it is more than twice as large as Wales, with rather less than twice the population. The old city of Peshawar (population nearly 100,000) is the capital. The people are nearly all Mussulmans, and mostly of Afghan descent. It is needless to add that they are, not to put too fine a point on it, unruly. The border tribes, especially those in the Tirah area, between the Khaibar and Kuram rivers, have always given us a great deal of trouble, and amongst them the Afridis have always had the worst reputation. The Zakka Khel have particularly cherished and shown animosity against the Feringhi. Their habitat is principally in the valley of the Bazar and Chora rivers, but they have many relatives to the north and to the south of the surrounding hills. They are the chief Afridi tribe, and are able to raise, according to the best authorities, at the very

least, 7,000 to 8,000 fighting men, well armed, and thoroughly accustomed to mountain fighting. Apart from the political sentiment which creates "buffer states," they owe their semi-independent existence to their "mountains." The great ridge of the Safed Koh forks, about long. 71°, into two arms—on the north the Alachi Ghar, and on the south the Sur Ghar. It is between these two walls, approached by passes almost Alpine in height—that is, from 4,000 to 6,000 feet—in a more or less inaccessible *cul-de-sac*, uninviting, and therefore little known, that the Zakka Khel build their mud-towers and forts and terrace the mountain-sides in pursuit of agriculture. It is questionable whether they can find as much as 50 square miles of cultivable land in the whole of their territory, though the rice-fields of Bara and the wheat of Maidan (15 or 16 miles south-west of the Mangalbagh Pass and in the Bara valley) are notable. Ten years ago we had a severe struggle with them. That was not the first time. In 1879, and again in 1880, as well as in 1897 and the present year, their chief village, Chinar, was destroyed by our men. In the Tirah Expedition of 1897 General Lockhart had with him some 35,000 troops, and his "victory" cost him over 300 men and 23 officers. The lesson he read them was salutary enough for a time, but it has long been evident that another was necessary. At or about the beginning of February last matters culminated in an Afridi raid on Peshawar itself. The culprits with their loot got off scot-free. Here is the result in chronological form :—

Feb. 12.....Concentration of "Bazar Valley Field Force," consisting of about 6,000 troops (exclusive of reserves), under General Willcocks, at Peshawar.

Feb. 19.....Chinar razed to the ground.

Feb. 23....."Jirgah" (intertribal meeting) of Afridis interview British representative on the question of submission.

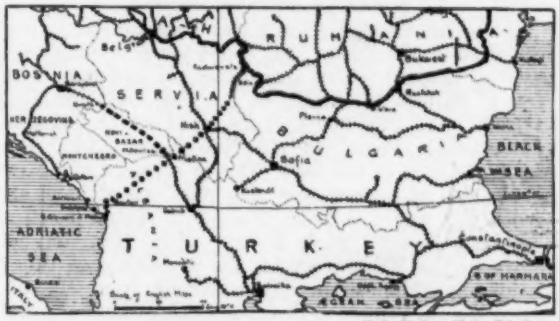
Feb. 27.....Formal submission of the Zakka Khel.

A combination of good generalship with adaptability to geographical environment—no slight point in a country like this—produced this result in as many days as it formerly took weeks. "Sniping"—an art in which the Afridis are second to none—was largely nonplussed by the use of mountain-guns and counter-sniping. The Bazar Pass (5,772 feet), one of our chief approaches, was preferred to the Bori (5,300 feet), owing, probably, to some woeful experiences of the latter in the 1897 campaign. The Sisobi, Tibai, and Mangalbagh passes were monopolised by the Zakka Khel, mainly in strategic movements to the rear. The final submission was complete, and cemented over a deposit of 20,000 rupees' worth of rifles. By the terms—voluntary terms, be it observed—the whole of the Afridi people guarantee to be responsible for the good behaviour of the various Khels (the Zakka Khel amongst them), and to put down with a firm hand the intertribal squabbles which lead to international complications. We wonder how long the "treaty" will last. The Afridis are saturated with blood-feuds. A man will wait watching a week to get a shot at his neighbour. Modern arms of precision have compelled them to work in their fields only by night. He would be a bold prophet who would say that Chinar has bitten the dust for the last time!

The Balkan "Railway War."

A storm has arisen in the Eastern teacup over an apparently insignificant railway project. It gives us an opportunity to bring up-to-date a railway system which has been making steady, if slow, progress during the last thirty years.

The map shows all the existing railways of the Balkan Peninsula and the new project, or rather projects, over which the dispute has arisen. To understand it one has to go back to the Berlin Treaty of 1878. Steering as clear of politics as we can, it is sufficient to say that Russia, who exercised a—shall we say "guiding"?—hand in the extension of Rumanian and Bulgarian railways, was much averse to the completion of any through lines to Constantinople until her Bulgarian schemes had been carried out. Austrian influence, however, by 1888 had so worked that the main line from Belgrade to Constantinople was finished. In the following year the direct southerly extension to Salonika was also opened. Having scored heavily, Austria went ahead. The Treaty of Berlin had practically handed over to her Bosnia and Herzegovina, and given her a strong incentive to run a southern line to the



E. R. Wethey, M.A., F.R.G.S.

The Balkan Railways.

— — — The Austrian project to join Bosnia to Salonika *vid* Mitrovitza.

+ + + The Russian counter-project to join the Rumanian railway system to the Adriatic *vid* Pristina.

A–H = Austria-Hungary.

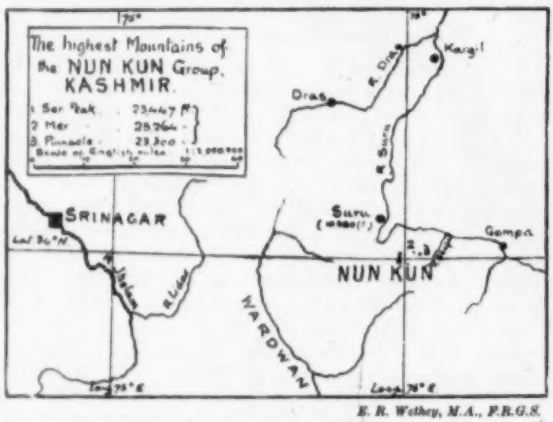
Adriatic. This, however, was not completed until 1906, when Cattaro was reached *vid* Metkovich, a line which is eventually to be carried on to Antivari and Scutari. In the same year a short extension was opened from Sarajevo to Uvatz, a town on the border of the *sanjak* (district) of Novi-Bazar—another Turkish province under Austrian military occupation, though still administered civilly by the Sultan. It is this extension—or, rather, its obvious development—which has provoked the storm. Austria, notwithstanding an awkward break of gauge, naturally wishes to connect it, through Novi-Bazar, with Mitrovitza, and so link up another connection with Salonika on the Ægean Sea. But this means competition with the Servian and Bulgarian lines, and—worse than all!—the probable establishment of better control over Bosnia, Herzegovina, and Novi-Bazar. Hence the Russian counter-project—to join the Rumanian system, by a bridge over the Danube at Raduievatz, to Nish, and to carry this line forward to the Adriatic at San Giovanni di Medua, *vid* Pristina. Other ideas from the same quarter favour a Sistova-Sofia-Kustendil-Uskub or a Vidin-Nish-Mitrovitza extension, the object in each case being the same—namely, approach to the Adriatic. The Servian pig-dealers—no unimportant section of commercial Servia—are hot for one of these "Russian" schemes. With the politics of the matter, interesting though they be, we are not

at present concerned. Probably both railways will come in time, though the engineering difficulties in face of the physical geography are obviously difficult. Such a development will work wonders in a backward corner of Europe. Albania, for instance, will no longer be able to keep up its reputation of the most murderous country in civilised regions (50 per cent. of its annual mortality record is said to be made up of violent deaths!); Macedonia, perhaps, will be able to relax its precautionary regulations for its railway "guards." They "police" its entire system, at distances almost marching with alternate telegraph poles, and have instructions to shoot down at sight all suspicious characters! It may even be possible, in the dim future, to see a classical schoolmaster who desires to ascend Olympus (just across the Bay of Salonika) carrying out the wish of his heart, without the escort of the twenty or more soldiers who are necessary at the present time; for Olympus just now, *horrendum dictu!* is not so much a home of gods as of brigands.

A Lady's Record Climb.

At a recent meeting of the Royal Geographical Society Dr. Hunter Workman, the well-known mountaineer, gave an account of his expedition, in company with Mrs. F. Bullock Workman, to the Kashmir Himalayas in 1906. On July 29 the lady stood on the summit of "Pinnacle Peak" in the Nun Kuns, 23,300 feet above the level of the sea! This is a record climb for a lady, and one which very few men indeed have exceeded. If any one is to beat it, it should be Mrs. Workman herself. Such is her vigour that, on her return to the Western world, she actually gave thirty lectures in thirty-seven days, starting from Munich, and going *via* Vienna to Dresden, Berlin, Hamburg, and intermediate towns.

The whole account of the expedition is of absorbing interest. We advise all geographers to turn to the



E. R. Wethey, M.A., F.R.G.S.

Society's *Journal* for January and read it for themselves. The illustrations alone are worth the trouble. But "Himalayan" aspirants should be warned that this sort of recreation costs money. Quite apart from the expense of getting to the scene of operations, and conveying there a first-class Alpine guide and six professional "porters"—which is what the Workmans did—it required no less than 243 coolies and 60 ponies to carry the necessary provisions, along the ordinary Leh route *vid* Dras, from Srinagar to Suru! The latter was what might be termed the last civilised post (10,000 to 11,000 feet up), whence tracks were made for the great Nun Kun *massif*. The *massif* is roughly a square with a side of eleven miles, and great peaks rising 20,000 feet and over upon it. Hitherto it has been secure from intrusion by reason of its inaccessibility and its difficult glaciers, though the valleys around have for years been visited by sportsmen. To get up to the "plateau" the party made for the Shafat Valley, which involved a long journey up the Suru to a couple of miles beyond Gompa, where the river was fordable, and then back again down the left bank.

Effect of Great Heights on Climbers.

A point of general interest—much more attractive than the somewhat technical investigations of how *nieves penitentes* are formed, or why certain glaciers have no terminal moraines—is the way in which these valiant climbers *felt* their environment. First there were the steep snow and ice gradients on a mountain of the very first rank. Then there were the great differences of day and night temperature—190° F. as compared with several degrees below zero! And, lastly, there was lack of oxygen. The coolies were no good at all; they could get up to about 20,000 feet, and no further. Hence the necessity of taking Europeans. It was at this elevation of 20,000 feet that serious symptoms began to develop, though, of course, there had been plenty of warnings before. Briefly, these symptoms may be described as mountain-sickness, inability to get breath, and sleeplessness, with the natural total result of intense disinclination to work or even move. At their highest camp—21,300 feet—which Mr. Workman claims as a record for pitching a camp and passing a night,* one strong and active man was so overcome and his circulation so enfeebled that he had to be sent back down to a lower level. All were troubled in the matter of respiration, especially when lying down: hence the sleeplessness. Dr. Workman himself, during the five nights which the party spent on the highest points, never slept once. This meant much weakening of vitality, which required intense will-power to counteract. How the porters ever got their respective forty-pound loads up to the highest camp is astonishing. It was irksome to bear even the weight of the clothes necessary to withstand the cold of the nights; and to go out photographing, as the doctor did, at 22,720 feet, was an incredibly difficult task. To take scientific observations under these conditions is, says Sir Thomas Holdich of Andean and Indian frontier fame, as if a man who was at sea in very stormy weather, and very seasick withal, were suddenly asked to make records of the height of the waves and the strength of the winds! It is this question of insomnia more than anything else that inclines Dr. Workman to the opinion that such heights as Everest are unclimbable.

* Johnson on the Kuen Luns in 1864, and, within recent years, Rankin on Aconcagua and Longstaff in Tibet, are claimants up to 22,000 and 23,000 feet. Dr. Workman says that these measurements lack the accuracy which characterised his own efforts. But the difficulty of determining heights at such elevations as these is notoriously great, and a certain amount of inaccuracy is probably unavoidable in every instance.

A Useful Invention.—All those who are interested in the important matter of laying the dust—we speak literally—ought to try *Florigene*, an odourless fluid that is intended to be spread thinly upon the floor-boards or lineoleum. The preparation dries quickly, leaving a thin filament to which the dust adheres, and from which it can be readily removed with a hard broom. The recent large increase in the circulation of the *Practical Teacher* has prevented our making a personal trial of Florigene, but when we have leisure to lay the dust we hope to experiment with it.

A POETRY LESSON.

THE LADY OF SHALOTT.

BY A. E. ROBERTS, M.A., ISLINGTON DAY TRAINING COLLEGE.

(*Continued from page 464. See also page 520.*)

II. *Presentation.*

We must bear in mind that the object of our first lesson is to get a *general idea of the whole poem. Content* rather than *form* must be studied. Our chief business is to get to the heart of the author, and anything that is made to stand between the children and the author's meaning is obviously an impediment to the due appreciation of the poem as a work of art.

The poem consists of four scenes or parts, and we can either read the whole uninterruptedly from beginning to end, or we may stop at the end of each scene to make sure the children follow the general idea of what we are reading. The essential thing is to carry them along with us. If we stop at the end of each scene, we treat each part as a method-whole. Each of the four parts will then be read uninterruptedly *by the teacher*, so that the children may get a mental picture of those parts; these are then linked so that the organic unity is brought out. The articulation—that is, the interconnection of the several parts—must be clearly seen, and we must take care that we do not break the continuity of the poem. During the first lesson there is little fear of this. The danger is rather in later lessons, when we are going into detail. The questions on each part and on the whole, we must remember (if we stop to ask questions after each part), should be such that their tendency is to concentrate the child's mind on the main points of the thought whole.

At first it will be better for the class *not to have copies of the poem.* It is impossible to appeal successfully to the ear and to the eye at the same time. Without books the children will be better able to visualise the scenes and feel the emotions. If their eyes are closed, the children will be less likely to be distracted by what is going on around them. Their visual imagination will have freer scope.

Let us suppose we deal with the poem in four parts.

Part 1.—After the teacher has read the part expressively and uninterruptedly, the class is invited to give in words the scene they have pictured before their eyes. In one class, instead of asking for a continuous account of the content of the scene, the following questions were asked to see whether all understood: Who is the chief person mentioned in the scene? Where does she live? What is the country like in the neighbourhood? What people besides the Lady of Shalott are mentioned in the scene? How far do the neighbouring country people know the Lady of Shalott?

The amount of the questioning will depend on the individuality of the teacher. Too many questions of this kind at this stage are likely to break the continuity of effect. Moreover, there is danger of dropping from the sublime to the commonplace. So soon as a clear mental picture of the setting of the poem is obtained by the children we pass on to the next part. During a lesson the writer gave, a picture drawn roughly on cartridge paper in charcoal describing the scene—the isle in the river, the tower, the cornfields, reapers, "many-towered Camelot" in the distance—was pinned on a blackboard. This was very effective, and made questioning quite unnecessary. The children were left in silence for a minute or two, after the first part was read and the picture was shown, to enable them to interpret the picture. Some teachers would object to this plan as interfering with the picture the child has imagined. But, after all, we might as reasonably object to a class who are reading Shakespeare seeing the play acted.

In both cases the child's æsthetic appreciation is increased—that is, if the play is well acted and the pictures are well drawn. It is, I think, the teacher's business to develop the powers of visualisation in the child. The children were asked to suggest a title for the picture. After "The Island Home of the Lady of Shalott" was suggested, we proceeded to Part 2.

Part 2.—This was dealt with similarly to Part 1. If a picture showing the Lady of Shalott before a mirror at her loom is exhibited at the end, questions will scarcely be found necessary. Such questions, if required, might be: What does the scene describe? What is the Lady of Shalott doing? What does she see before the mirror? Does she like this life? These queries will focus the attention on the main points, and the teacher will be able to see whether the class has grasped the central idea. After a title, such as "The Life of the Lady of Shalott" or "The Lady of Shalott at her Loom," is suggested by the children, the teacher proceeds.

Part 3.—The children should be made, by the effective reading of the teacher, to feel the brilliance of the scene as conveyed by the words "dazzling sun," "golden cornfields," "flamed," "sparkled," "gemmy," "glittered," "stars," "blue unclouded weather," "burned like one burning flame," "burnished hooves," etc. All these ideas intensify the picture of brightness, and throw it into strong contrast with what precedes and what comes after. A child on being questioned says that the scene describes the Lady of Shalott leaving her work to see Sir Lancelot riding past. A picture of Sir Lancelot riding past the tower with the Lady of Shalott at the casement is presented. A title is suggested by the class—"Sir Lancelot," "The Curse on the Lady of Shalott," "The Lady of Shalott leaves her Old Life."

Part 4.—The children are very anxious to know what happened to the Lady of Shalott, and their feelings will be tense at this point. By effective pausing and proper intonation of the voice the teacher will make the class feel the contrast in the atmosphere of the scene from that of the previous one: the "dull cloudy sky" in harmony with the events. All through the poem the effective reading will do much towards a realistic visualisation. A picture of the Lady of Shalott, robed in white, drifting down to Camelot in her boat, is put on the board. A title, "The Death of the Lady of Shalott," is suggested.

After the various parts have thus been separately read and the class has got the general drift of each part, the four parts are easily linked together by allowing the children to examine silently the four pictures, which should be left on the two blackboards, on which it will be necessary to pin them close together.

To save time, I found it convenient before the lesson to fix on the boards with drawing pins the left side of each of the pictures. Each one was thus hidden from view until it was required. Being rolled up before being used, it automatically rolled up towards

the fixed part. When each was required, it was easy to unroll it and fix the other side.

The four pictures serve as a revision of the whole story. If pictures are not used, the titles summing up each scene may be written on a blackboard, and these will form a skeleton outline of the story and show the interconnection of the parts at a glance.

This main portion of the lesson will take about twenty-five minutes.

Application.—Three or four children tell the whole story in consecutive narration, using the language of the poem as far as possible. In the lesson given it was surprising (to some of the students who heard it) to find the children quoted so freely from the poem itself.

Books are now given out, and the children are required to read the poem through silently during the remaining ten or twelve minutes, and they are required also to re-read it at home.

As an exercise in the drawing lesson a teacher—if he considered such an exercise enhanced the children's appreciation of the poem—might require the class to draw roughly the pictures for themselves, expressing the story they have read. This "picture" paraphrasing is distinctly interesting. The story might, of course, also serve as the subject for the next written composition lesson. Before dismissing the class I advise the children to see the picture of the "Lady of Shalott" in the Tate Gallery, and promise them that they shall know more of Tennyson's stories of King Arthur. I suggest that they themselves may like to read "Morte D'Arthur" or "Lancelot and Elaine." *N.B.*—Further lessons will follow this, treating each division more closely, paying greater attention to *form*, but always in its relation to *content*. Explanations of words, figures of speech, metre, and the like will be necessary perhaps, but let us always reduce such detailed examination to a minimum so far as possible.

Finally, the poem will be read through uninterruptedly after (1) the content has been studied and (2) the form, the object of the final reading being to gather up the results of the preceding study, emotional, intellectual, and æsthetic. I was almost adding "ethical" after "intellectual." Before one class of children, twelve years of age, I asked the question, whether the children thought the lady did rightly or wrongly in leaving the web. I felt the experiment was somewhat risky, and that this was no place for moralising. Of course the probability is we have simply a picture. Tennyson is not moralising. The Lady of Shalott is unfortunate, not wrong (or right), in this matter. Some of the class when questioned said in substance that we ought to submit to the life God sends us, however dull and cloudy it is; the outside world may be a life of sunshine, but the glitter of mere worldly pleasure often is synonymous with death. Others suggested that it was better to have some real object in life, even though we are not successful, than to submit to a life that cannot do any good in the world.

I do not remember the exact words. The discussion was at any rate interesting, and in this case perhaps not altogether harmful, though I think it would have been better omitted altogether. It did nothing to enhance the beauty of the poem. Remember the æsthetic appreciation of the poem is our purpose. Before we finally leave the poem we should expect the result of our lessons to find an outlet in the expressive reading of the poem by one or two of the children. It is a mistake to have the children read it at the beginning of the lesson. The effectiveness of the reading by the teacher cannot and should not be lost. To have a child read the poem at first would go far towards killing the enjoyment of it by the children. There is no necessity, by the way, to have the poem memorised unless the teacher likes. It would not be necessary to mention this, did I not know that literature in many schools consists almost exclusively of the memorisation of a few poems year by year. The course in literature in the elementary school is not nearly wide enough as it is.

THE BATTLEFIELD OF HASTINGS.

PART II.

BY E. A. GREENING LAMBORN, OXFORD.

AFTER the battle of Hastings William marched to Dover and took its castle, so that he might have a safe line of retreat to Normandy. The constable of the castle was Bertram Ashburnham, whose descendant, the earl, lives now not far from Battle. Bertram was executed by the ruthless Norman for resisting his "lawful" sovereign. John Ashburnham, who aided the escape of Charles the First from beleaguered Oxford by passing him off as a man-servant, was the descendant of Bertram and the forefather of the present earl. At Ashburnham House are still preserved some relics of Charles—the shirt in which he was executed, with his blood still on the ruffles; his drawers; the sheet in which his body was wrapped, and his watch.

When the land was settled under his rule, William remembered his promise to build an abbey on the ground where his kingdom was won. He commissioned four monks from Marmontiers to carry out the work. At first the stone was brought from Caen to Hastings; but the site of a quarry (which can still be seen near the powder mills) being divinely revealed to a pious matron in a dream, the building was completed with local stone. Still William did not live to see it, for the plan of the abbey was so largely conceived that the work was not finished till 1095, when the building was consecrated by Anselm, in the presence of Rufus and many bishops and nobles. The king gave into the abbot's charge his father's sword of Senlac and his coronation robe. Rufus was then at Hastings waiting, in the castle which the Earl of Eu had just built on the cliff, a favourable wind to cross to Normandy. Until the duchy was lost by John, Hastings was the principal port of embarkation for the English provinces in France. Coins struck here for the early Norman kings tell of the importance of the place in those days. A collection of coins from the Hastings mint may be seen in the Brassey Institute.

Hastings was one of the five (*cinq*) ports—the others were Sandwich, Romney, Hythe, and Dover—which had been entrusted by the Confessor with the duty of providing ships for the defence of the coast. It was an important shipbuilding port in Norman times, as is evident from the fact that it was selected by Henry the First to build a special ship for the royal use. Hastings supplied ships and seamen to serve under Lord Howard against the Spanish Armada, for which loyal service it was incorporated a borough.

Rye and Winchelsea, nine or ten miles eastward,

where the Rother reaches the sea, were also important seaports. At Winchelsea, in December 1170, landed the four Norman knights who, taking devious routes, met again at Canterbury to do before the altar of the cathedral that deed of blood which shocked the conscience of Europe. But *that* Winchelsea lies buried in the alluvial plain that stretches between the present town and the sea. Successive inroads of storm and tidal waves through the thirteenth century ended, in 1287, in the complete destruction of the town. Edward the First caused it to be rebuilt on the cliff where it now stands. But the hand of Fate was raised against Winchelsea. Hardly had the new town come into being, with its three churches, one of which was as magnificent as a cathedral, when the slow upheaval of the land began to lift it high and dry above the sea on which its prosperity depended.

The chancel of the great church—itself a church more than large enough for the needs of the present population—remains to tell of departed glories. The fourteenth-century tombs of the Alards, one of whom was Admiral of the Cinque Ports in 1306, can hardly be matched for beauty of design by anything at Westminster or Tewkesbury.

Besides dreading the treachery of their friend the sea, these Sussex ports had always to guard against attacks from their natural enemy the French. In 1359 three thousand French landed at Winchelsea while most of the citizens were at mass. They butchered the unarmed townsfolk in the churches, set fire to the houses, and departed with much plunder. Next year they came again, and killed most of the men in the town. In 1377 a French fleet burned Hastings and effected a landing at Winchelsea. But stout Homo de Offyngton, Abbot of Battle, came to the rescue, and drove the French back to their ships. Winchelsea was burnt again in 1380, and once more in 1448. In the reign of Henry the Seventh all the merchants left a port which no longer had a harbour, and the town gradually became the dreamy, picturesque survival of the Middle Ages which makes the visitor of to-day rub his eyes with the bewilderment of Rip van Winkle.

The history of Winchelsea is practically the history of Rye. But Winchelsea is like an old man in that advanced state of senility which fails to comprehend the present conditions, and nods and dreams among memories of the past. Rye, on the other hand, is a hale octogenarian, who can still potter about at odd jobs, and is not without some appreciation of the financial value of picturesque old age in the eyes of artists.

Until the mineral resources of the north of England were discovered and exploited in the eighteenth century, the charcoal furnaces of Kent and Sussex supplied the whole country with iron. How rich in that metal the soil of Sussex is may be curiously seen on the battle-field of Hastings, where, after rain, the pools and marshy spots are rusty red with iron oxide. Was it this peculiarity that caused the scene of the battle to be called Sangue-lac? Or was it, as some think, that real blood lay in pools on the field of slaughter and gave the valley its ghastly name? In many of the churches round Hastings—at Sedlescombe, Wadhurst, and Solehurst, for instance—iron grave-slabs remain to remind one of the departed industry.

Another departed but less-to-be-regretted trade which once employed a great many persons in these parts was the illicit but lucrative occupation of smuggling. Men of all classes engaged in the traffic. Even the clergy were often accessories after the fact, and occasionally before it. Mr. Egerton of Burwash relates the story of the incumbent of a parish near Hastings who became so "indisposed" one Sunday that he was unable to hold a service all day, the cause of his sudden attack being an early morning communication from some of his parishioners informing him that they had had the misfortune to be hard pressed by the revenue officers, and had been forced to stow away a cargo of rum in the pews of the village church. They urged the parson to "do the best he could for them," which he apparently did by a policy of "masterly inactivity." John Wesley makes reference to the illegal traffic in his diary for 1773: "Monday, November 22, set out for Sussex, and found abundance of people willing to hear the good word, at Rye in particular. And they do many things gladly, but they will not part with the accursed thing—smuggling."

All round Hastings there are places full of interest for the lover of history, but editorial limitations of space forbid me to do more than touch on a few. There is Bodiam Castle, built in 1386 by Sir Edward Dalyngrudge with his share of the wealth looted from the sacked cities of France. With its moat and causey, its great gateway with portcullis, and machicolations through which molten lead might be poured on the heads of assailants, its hall, chapel, and kitchen, it is perhaps the most perfect example we possess of a mediæval fortress. The ruined castle of Hurstmonceux is a century later in date, and shows the development made in domestic architecture during the fifteenth century. It is specially interesting to the student of architecture as being one of the earliest examples in England of the revived use of bricks—a material which had fallen out of use in Europe since the overthrow of the Roman Empire. Other places in the neighbourhood which should be visited, if possible, are Brightling, with its observatory and obelisk built by the eccentric John Fuller, who, by the directions in his will, is buried, like the Pharaohs, in a pyramid; Etchingham (with the accent on *ham*, please), where there is a beautiful fourteenth-century church surrounded by a moat; and Bexhill, which is an English Boulogne in miniature.

Since every visitor to Hastings, whatever else he may neglect to see, will assuredly make a pilgrimage to the spot where

> "Still the proud ruins of the abbey tell
> Where William conquered and where Harold fell,"

we will not conclude this paper without completing our sketch of the abbey's history.

Throughout the Middle Ages it continued to increase in wealth and power. Successive kings enlarged or confirmed its privileges, which were often attacked by the Bishop of Chichester, backed by the authority of the Pope. John visited the abbey early in the thirteenth century, and presented its altar-shrine with a piece of the holy sepulchre brought from the Holy Land by his brother Richard. Henry the Third was a guest before and after the battle of Lewes. His son Edward also stayed there, both as prince and king. In 1333 Edward the Third granted the abbey a royal licence to crenellate its buildings, and the present gateway was thereupon erected. At the dissolution the monks and the last abbot, John Hamond, were pensioned, and the estate was granted to Sir Anthony Browne of Cowdray, whose tomb and that of the abbot may be seen in Battle Church. The abbey passed by inheritance to

the Viscounts Montague, and was sold in 1719 to the Websters. The Duke of Cleveland bought it in 1858, but on the death of the duchess in 1901 the estate was bought back by the Webster family for £200,000. Only the foundations of the great church remain. The ruined refectory is often mistaken for the church by visitors, and was so mistaken by Horace Walpole, as one of his letters shows; but the broken stone slab of the high altar still marks the spot where the body of the last Saxon king was found beneath the piles of dead heaped round the Saxon standard.

> "Here rose the dragon-banner of our realm;
> Here fought, here fell, our Norman-slandered king.
> O garden blossoming out of English blood!
> O strange hate-healer, Time! We stroll and stare
> Where might made right eight hundred years ago.
> Might, right? Ay, good, so all things make for good.
> But he and he, if soul be soul, are where
> Each stands full face with all he did below."

A WORLD'S RECORD FOR CYCLES.—Last year Messrs. Edward O'Brien, Limited, the well-known cycle dealers of Coventry, created a sensation in the world of wheeldom by placing an order with one maker alone for 20,000 high-grade cycles. We understand that this order has been eclipsed by the same firm placing with a leading Coventry manufacturer an order at the last Stanley Cycle Show for no fewer than 30,000 bicycles to be delivered during 1908. It is by buying in these enormous quantities that Messrs. Edward O'Brien are able to sell at exceptionally low rates, and all our readers who contemplate buying a new mount for 1908 will do well to write to this firm for a list.

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LA VIE PROVINCIALE EN FRANCE.

PAR MARGARET ROBERTSON, MÜHLHAUSEN, ALSACE.

I.—LE VOYAGE.

J'AI quitté Aberdeen, pour aller en France, un lundi matin, vers la fin du mois d'octobre. J'allais à Millau dans l'Aveyron, passer une année "au pair," dans une pension de jeunes filles, ayant le désir d'apprendre le français. En regardant la carte, nous voyons que Millau est situé près de l'extrémité méridionale des Cévennes. Je croyais que c'était-là le "Midi de la France." Quand j'y suis alleé l'on m'a vite fait comprendre l'inexactitude de cette expression. Le vrai midi est la Côte d'Azur sur la Méditerranée même; et l'Aveyron et ses départements voisins, quoique très au sud, s'appellent "départements du centre." J'avais toutefois, pour arriver à ma destination, à traverser trois pays: l'Ecosse, l'Angleterre et la France.

La première partie de mon voyage s'est passée sans incident. Mes souvenirs en sont plutôt vagues. Je me rappelle seulement combien j'étais contente d'avoir des amies à Londres, et ma reconnaissance pour leurs bons offices. Je me rappelle aussi—souvenir moins agréable—la manière brutale du commis qui me donna, chez fles agents Cook, mes billets pour Paris via Douvres et Calais. Je souhaitai, en le quittant, trouver, chez les commis français, plus de complaisance, et je n'ai jamais eu raison de me plaindre. Je me rappelle encore le trajet de Londres à Douvres en compagnie d'une Allemande qui pleurait à chaudes larmes, et d'un jeune Espagnol qui avait l'air de s'ennuyer beaucoup; à propos, je l'ai retrouvé dans le train de Calais à Paris, se consolant avec une cigarette à parfum fort. Je me souviens de ma crainte d'être trompée en changeant mon argent dans le bateau; du plaisir de la traversée sur une mer, calme comme un lac; et de l'amusement que me causait une jeune Irlandaise, à qui on avait, sans doute, donné de nombreux conseils sur les moyens d'éviter le mal de mer. Elle avait choisi une bonne place sous la tente, et elle s'est d'abord allongée. Au bout de quelques minutes la voilà debout, croquant des biscuits, et marchant doucement le long du pont. C'était-là ses précautions; et elle les continuait pendant les quatre-vingts minutes de la traversée, bien que la mer ne fût pas à craindre.

Je me rappelle la première vue de la ville de Calais, où j'ai entendu, pour la première fois, parler le français en France. Ce qui est amusant en débarquant, c'est d'écouter le mélange d'accents et de langues. A peine le bateau touche-t-il terre que la bagarre commence.

Ma malle était enregistrée jusqu'à Paris; mais il fallait aller à la douane, faire visiter la petite caisse que j'avais avec moi. Un interprète m'offrit ses services, sans pourtant me parler. Il me prit tout simplement la caisse, et partit avec. Je le suivis. On m'a dit depuis, qu'il y a des interprètes qui, lorsqu'ils sont en présence de leurs compatriotes, portent avec fierté la casquette ornée du mot "interprète;" mais qu'aussitôt qu'un étranger s'approche d'eux, ils retournent leur béret, de façon que le mot ne paraisse point. Quoiqu'il en soit, mon interprète (qui m'a coûté un franc, comme tous les nombreux commissionnaires qui me servaient) ne m'a rien dit en anglais, sauf le seul mot "hat;" prononcé en indiquant ma caisse où il y avait, en effet, mes chapeaux. La douanière, en vraie

femme curieuse, en a sorti tous les cinq ; et une Française qui assistait à la visite, m'a dit plus tard, qu'en voyant tous les chapeaux, elle me croyait modiste.

J'ai voyagé ensuite avec cette dame, jusqu'à Paris elle était très aimable, répondant à toutes mes questions, et m'expliquant, sur ma demande, pourquoi il fallait dire : "Je suis fatiguée," et non pas, "Je me suis fatiguée." Nous nous sommes séparées à Paris ; et me voilà seule, à la Gare du Nord ; à la main ma caisse à chapeau et un petit panier de gâteaux et de fruits ; ne sachant où trouver ni ma malle, ni la douane ; ni où il fallait acheter mes billets pour la Gare de Lyon et Millau. Il était quatre heures du soir ; j'avais voyagé depuis la veille à six heures du matin. Il faisait chaud ; et j'étais habillée pour l'octobre écossais, pas pour l'octobre français, en grand manteau d'hiver sur ma jaquette, avec une fourrure et un manchon. J'y pense toujours en entendant chanter la jolie ballade :—

" Je suis encore tout étourdie ; je suis encore tout engourdie,
Ah ! mon cousin, excusez-moi, j'en suis à mon premier voyage ! "

Enfin j'ai trouvé un commissionnaire qui m'a amenée à la douane, où l'on m'a posé plusieurs questions, auxquelles, ne comprenant rien, j'ai répondu au hasard ; et on m'a laissé partir sans avoir ouvert ma malle. J'en étais bien aise, car elle était pleine à déborder, et il est sûr qu'une fois ouverte, elle eût été difficile à refermer. Après pas mal de répétitions de la même chose, j'ai fait comprendre à mon facteur qu'il fallait m'embarquer par le Chemin de Fer Ceinture, pour la Gare de Lyon. Je le suivis au guichet ; et j'attendis pour savoir le prix de l'enregistrement de mes bagages. Il me faisait force gestes, mon bonhomme, mais je n'y comprenais rien, jusqu'à ce qu'il m'eût poussée de côté, et alors, je vis que je m'étais mise sur la bascule, et que j'avais couru grand risque d'être pesée avec ma malle. Il était vers cinq heures quand, toute opération faite, je me trouvai sur le quai, avec deux heures à passer. Le train pour la Gare de Lyon ne partait qu'à sept heures. Je me suis donc décidée à aller jusqu'à la sortie de la gare, pour regarder un coin de cette ville de Paris dont on m'avait tant parlé ! Mais un de ces flâneurs, si nombreux dans les grandes gares, m'arrêta ; et secouant impudemment ma caisse que je portais toujours avec moi, il me demanda : "Qu'est-ce que vous avez-là ? " J'aurais voulu rentrer tout de suite, mais ne sachant trop que faire je continuai mon chemin, et arrivai dans la rue. Je ne vis pas grand'chose après tout : des maisons hautes de six étages ; des voitures de toutes sortes qui se passaient sur la chaussée : un monde affairé qui se pressait sur les trottoirs, et au milieu duquel je me sentais bien seule ! Voyant une espèce de voyou qui me regardait, je me suis dépêchée de rentrer dans la gare, et de passer sur le quai désert, où j'attendis près de deux heures l'arrivée de mon train. Les commissionnaires, en blouse bleue, me regardaient en souriant, et enfin voyant sans doute, malgré l'obscurité de la nuit, mon air abandonné, un chef de gare s'approcha de moi et me dit : "Madame, vous êtes étrangère. Où allez-vous ? Je vous aiderai si vous voulez bien." Et il le fit. Une fois seulement je surpris le sourire moqueur du Parisien sur ses lèvres. Il venait de me dire : "Il faut traverser la voie, madame, marchez vite ! " et j'ai couru de toutes mes jambes, ma caisse me frappant les genoux, et il a ri. C'était pardonnable !

(To be continued.)

NATURE NOTES FOR THE MONTH—APRIL.

BY W. FRANCIS RANKINE.

" When proud-pied April, dress'd in all his trim,
Hath put a spirit of youth in everything."
SHAKESPEARE (*Sonnets*).

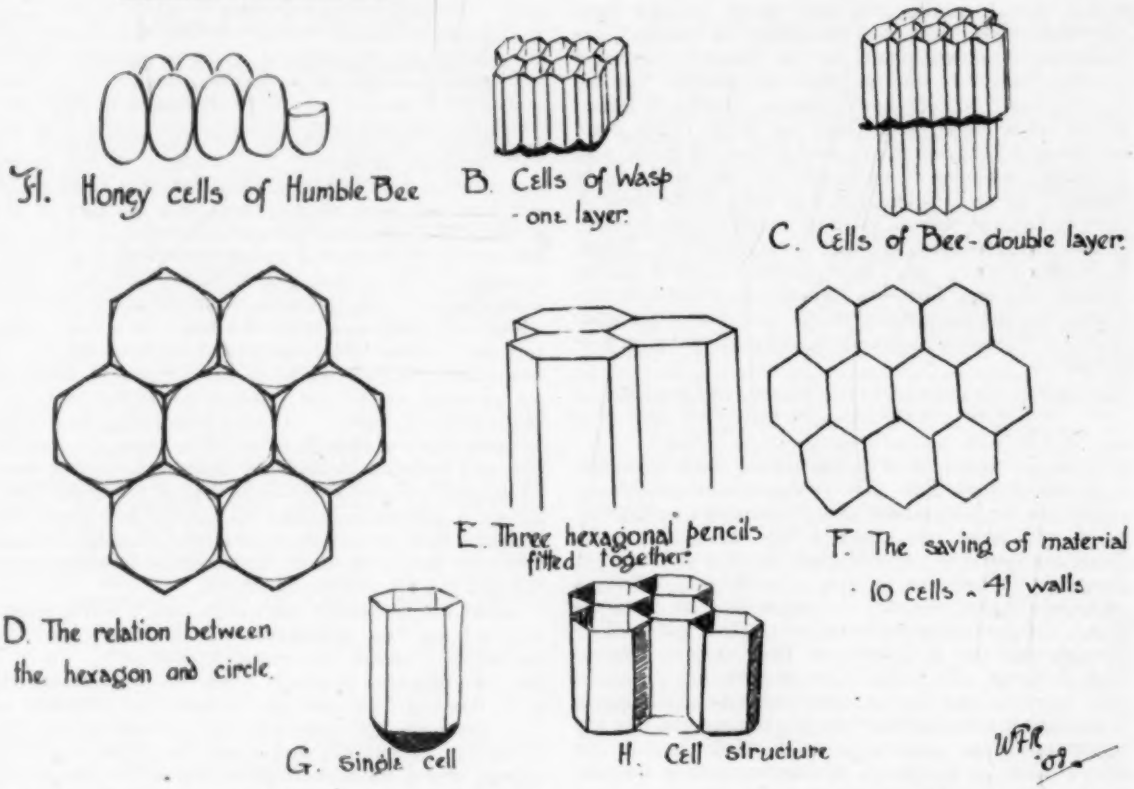
SPRING has commenced, and the promise of the year is revealed. The influence of the spring sun is felt in field and wood, and Nature is rousing herself from her long sleep. There is a pleasure in the woods and a gladness widespread over field and meadow, where the wealth of spring-time blossom is already apparent. The modest golden beauty of the common buttercup and the glossy yellow of the marsh marigold adorn the water meadows, and add a touch of colour to their verdure. The mauve and white of the cuckoo flower and the pure white of the stitchwort blossoms are pleasing to the eye ; the primrose carpet in the oak wood is sufficient testimony that spring has come, with its bevy of fair flowers. The trees are now in leaf, and some are in blossom. Among the former there is no more pleasing study than that of the horse-chestnut as it unfolds and raises its leaves ; and among the blossoms there is none more prominent than the crimson flower of the larch, while the modest blossoms of the oak and ash are interesting studies.

Insect life is steadily increasing, and a warm season will witness the appearance of the most beautiful harbinger of spring, the orange-tip butterfly. There is no more glorious spectacle than the first orange-tip in its dancing flight through the lane, and, common as it is, there are few butterflies that possess such dainty colouring. About the same time the white butterflies appear, and a warm morning at the end of the month will not fail to bring forth a procession of these insects. They are susceptible to the slightest unkind behaviour of the wind. Also there is the holly blue, a small and quick-flying butterfly, that derives its name from the favourite food of its larva. It is common where the holly grows luxuriantly, and is not so prominent as the previously mentioned species.

There are additions to bird life with the appearance of the cuckoo and nightingale and wryneck. According to tradition, the cuckoo is bound to arrive in April, and his first notes of the year are welcomed in rural districts. Often there are records of the cuckoo's note in March, and these are usually explained by the mimicking tendencies of child character. Yet he is rarely heard without being seen, and no observer of country life is deceived in the flight of this curious bird. The nightingale is precarious in its appearance, and often cold weather will delay its song. The wryneck or barking bird is the least admired of our visitors arriving in April.

MATERIAL FOR A LESSON ON CELL-MAKING INSTINCTS.

General.—The specialised habits of a large number of insects furnish us with instances of clever constructions, and unique among these are the cell stores that are constructed by the bees and wasps. The appearance of these insects during the present month furnish an introduction to this lesson. The cell-making instinct is referred to at length by Darwin in his great work on *The Origin of Species*, Chapter VII., and reference to this section will provide many ideas that are of value. As pointed out by this writer, the cell-making instinct


CELL STORES.
A. Honey cells of Humble Bee
B. Cells of Wasp - one layer.
C. Cells of Bee - double layer.
D. The relation between the hexagon and circle.
E. Three hexagonal pencils fitted together.
F. The saving of material - 10 cells - 41 walls
G. single cell
H. Cell structure
WFR. 09

of the hive bee in particular is highly specialised, and the hexagonal cells are of such a shape as to hold the greatest possible amount of honey with the least possible consumption of wax in their construction. The hive bee is the advanced type of this series of cell constructors. On the other hand, the humble bee, the nest of which is familiar to most boys, displays less specialised instincts in this direction. The cell stores of the humble bee are the old cocoons, which are sometimes enlarged by the addition of a wax structure. These, further, are seldom placed in orderly arrangement, and are quite unlike the regular cells of the wasp, hornet, and hive bee. The elliptical honey vessels of the humble bee are shown in Fig. A.

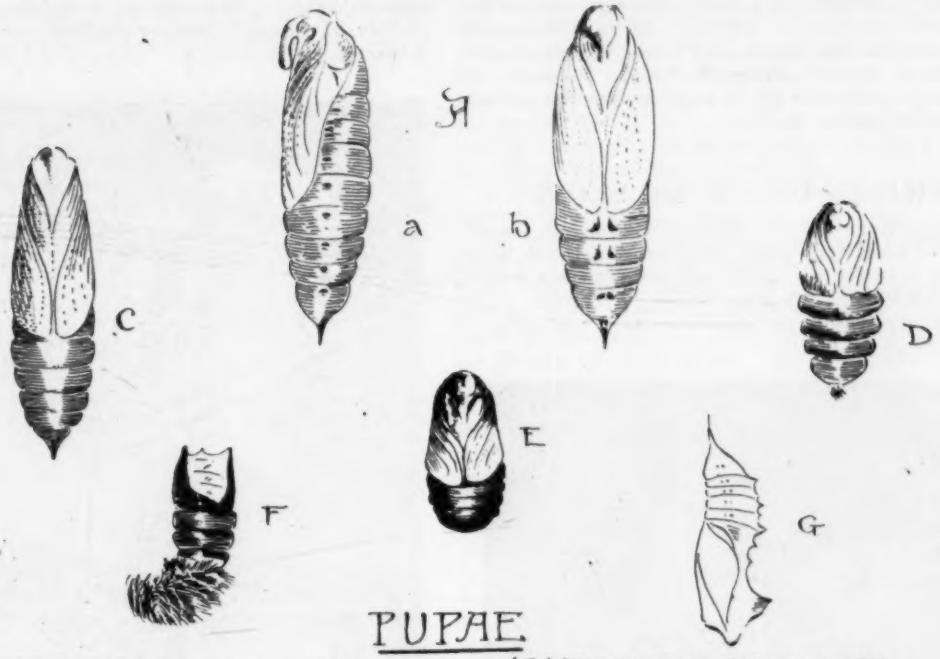
The wasp arranges its cells in single layers, and, like those of the hive bee, these cells are hexagonal prisms. The cells of the hive bee are arranged in double layers, and the prisms are larger than those of the wasp. The cells of these two insects also differ in composition, for while the wasp constructs its comb of paper pulp, the bee constructs its cells of wax. Hence in the series we have a progression in the cell-making instinct in three particulars—namely, (*a*) *structure*, (*b*) *arrangement*, and (*c*) *composition*.

(*a*) *Structure* and (*b*) *Arrangement*.
1. The humble bee constructs rude elliptical cocoons.
2. The wasp constructs a single layer of small hexagonal prisms.
3. The hive bee constructs a double layer of prisms.

(*c*) *Composition*.
1. The humble bee uses a coarse, brown wax.
2. The wasp uses a pulp made by the insect from decayed wood, bark, etc.
3. The hive bee employs a fine wax.

Structure of the Cells.—It will be found that the hexagonal shape is the best possible one for the objects which the cells have to carry out. The rude oval cells of the wild bees suggest that the hexagonal structure has been developed by natural instinct and selective forces from a more or less spherical shape. Mathematical considerations are naturally out of place in a lesson of this description, yet a simple experiment may be resorted to which will clearly indicate the relation that exists between the circle and hexagon. It is shown in Fig. D. Take several cigarettes, and placing them close together, exert a gradual and evenly-distributed pressure inwards. The ends of the cigarettes assume a roughly hexagonal appearance. This is best shown by fitting together two or three hexagonal pencils. The labour and material-saving value of this arrangement is apparent, for instead of building entire spherical cells, the insects may add five sectional walls to a completed hexagon, and two cells result. The addition of four more will give three cells; and the figure F shows ten cells made up of forty-one walls, while ten separate cells would need sixty walls.

Arrangement of the Cells.—The humble bee pays no attention to regular arrangement of cells, and they are



PUPAE.

(A) PRIVET HAWK MOTH; a, side view; b, front view. (C) ELEPHANT HAWK MOTH. (D) EMPEROR MOTH. (E) PUSS MOTH (F) TIGER MOTH showing cast skin of larva (G) CAMBERWELL BEAUTY.

placed in any position. The wasp usually places its cells in a vertical position. Yet this is subject to the nature of the nest, and it is not unusual to find them placed obliquely. The hive bee generally builds vertical cells. It is clear that a regular arrangement of cells secures a minimum of labour, time, and material. When we remember that the architectural processes are carried on in the dark, the wonderful nature of the cell-making instinct is emphasised.

Composition of the Cells.—The conditions of existence of the wild insects call for a material that shall be water-resisting and a poor conductor of heat. The paper material as used by the wasp is probably the best of all. Yet the wax of the hive bee and humble bee is a splendid protective substance.

Larvæ Rearing and Pupæ Management in the Classroom.

Caterpillars and chrysalides provide most interesting material for the nature lesson, and in the hands of a skilful teacher the children are led to see that the wonders of the insect world are not confined to colour of wing or grace of flight. During this month the larvæ of the common tiger moth are feeding, and being widely distributed may easily be secured on dock leaves or nettles. A close observation of this caterpillar provides one of the most educational studies in insect life. The creatures should be safely caged, placed in the classroom, and regularly dieted on fresh food. The changes that occur should be dated and recorded, and the study of change, as pointed out in the recent Suggestions, is a most useful introduction to nature study. The caterpillar is protected with elastic bristles which are as protective against impact with the ground as they are distasteful to a bird's palate. It has been stated that the hairs of the tiger caterpillar have been found in the gizzard of the cuckoo. This may be true, yet at the same time the larva is not an attractive morsel to the least fastidious of birds.

A drawing of the well-known Privet Hawk Moth chrysalis is given in A. This may be secured by rearing the caterpillar, which feeds on lilac, privet, or holly. If the larva be carefully fed and provided with a depth of soil when it is full fed, the pupation proceeds quite easily. It is a large species, and very suitable for classwork. The drawing was made from a specimen which should have emerged last June, but owing to the ravages of the ichneumon fly, the tissues have been used up for the support of a host of ichneumon grubs. C is the chrysalis of the Elephant Hawk Moth, which has been safely secured from a caterpillar. The caterpillar should be looked for in August in ditches. It feeds on the willow herb. It is a splendid example for classwork. D is a chrysalis of the Emperor Moth, which is widely distributed over the moorlands of England. The caterpillar feeds on heath, and when proceeding to change weaves a beautifully formed cocoon of silk. G shows the curiously spined chrysalis of the Camberwell Beauty, which now is the rarest of rarities. The specimen from which the drawing is made came from Chamonix with a consignment that led to great disappointment. On account of holidays the batch was neglected, and during September the emerging process commenced. Not one insect was obtained, for, owing to the excessive dryness of the pupa cases, the Camberwell Beauties succumbed in the struggle to free themselves. Rare specimens are often lost in this way, and sometimes through excessive moisture. Place

the pupæ in damp moss; experience soon teaches one how much moisture is required. With a reasonable amount of care the insects may be successfully reared, and furnish perfect specimens for the museum. In future papers reference will be made to other species suitable for class study.

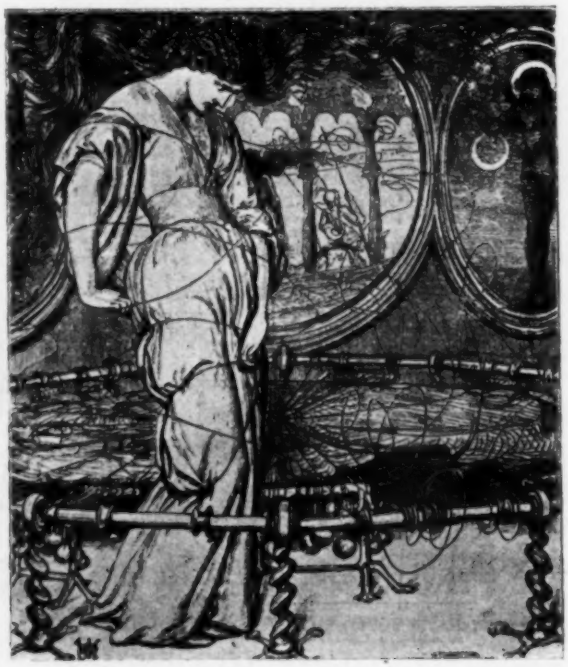
THE LADY OF SHALOTT.

IN connection with Mr. Roberts's lesson on Tennyson's poem (see page 513), we give below reproductions of two pictures, with reference to their sources, and a blackboard drawing by Mr. Wilkinson, to be used for explanatory purposes—not as a realisation of the knight of the poem.

THE LADY OF SHALOTT.—J. W. WATERHOUSE, R.A.
(From a photograph by Eyre and Spottiswoode.)

The above picture is in the Birmingham Art Gallery, and postcards can perhaps be obtained in that city. Will some Birmingham friend write to the Editor on this matter? He would be greatly obliged. The Waterhouse picture referred to in Mr. Roberts's paper shows the Lady in the boat, and postcards of this can be obtained from the usual dealers. If any country teacher cannot get them, and cares to send an order for a number to the Editor, he will hand it on to his own agent; but money must not be sent until the agent has quoted the price.

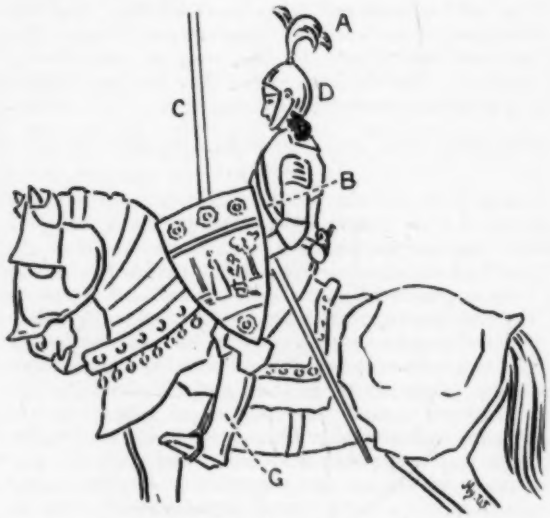
Postcards of Boughton's "Road to Camelot" are also published. The original is in the Walker Art Gallery, Liverpool. Country teachers may apply to the Editor, as above.



THE LADY OF SHALOTT.—HOLMAN HUNT.

The above is interesting as affording another artist's conception of the Lady. The Editor does not know of any reproduction, but copies of *The Practical Teacher* can be obtained for pupils' use in the usual manner—unless, indeed, this issue runs out of print, which is highly probable.

The first two pictures mentioned above will be found in Mr. Jenkyn Thomas's school poetry book, *The Harp of Youth* (Messrs. Nelson and Sons).



KEY—A, Plume or "helmet feather." B, Baldric. C, Lance. D, Helmet. G, Greaves.

COMMON-SENSE HINTS ON THE TEACHING OF ARITHMETIC.

BY AN INSPECTOR OF SCHOOLS.

(*Continued from page 404.*)

AS a rule I find that in the lower classes there is too little time given to blackboard teaching and too much time to the working of exercises; and a great deal of this time is spent, in large classes especially, in the correction of these exercises, when the teaching has not been sufficiently effective to give the child the capacity or foundation to work examples for himself.

The aim should be to "work all round" a sum with a view to developing the child's power of reasoning. An example will show how this should be done. The question is set, "Tom has 16 apples, Jack has 25; how many have both?"

This is the common treatment:—

Tom, 16 apples,
Jack, 25 apples

41 apples in all.

This is very well, so far as it goes; but it should go much further. The children have reasoned *once* and calculated *once*, but this reasoning and calculating should be multiplied many times. For instance, the next question should follow thus: "If Tom had 18 apples instead of 16, how many had both?" And the child should be led to see that if Tom's apples are increased by 2, the total of 41 previously obtained is increased by 2, and becomes 43. Secondly, "How many apples must Jack have so that both may have 40?" The reasoning should proceed on the line that if the total number is diminished by 1, then Jack's number will fall from 25 to 24.

Thirdly, "If Tom's apples are increased by 10 and Jack's by 10, how many will both have?" And it should not be a difficult matter for the teacher to draw from his scholars that the total of 41 is increased by 20, and becomes 61. An intelligent teacher will frame any number of exercises from these examples, and the child's interest will be stimulated and sustained and his power of reasoning and calculation greatly strengthened.

The previous example dealt with the "addition" side. Let us now take it from the "subtraction" side.

"There are 41 sheep in a field, and 25 are taken out; how many are left?"

The exercise is worked thus:—

41 sheep
25 sheep

16 sheep left in the field.

This is followed up thus:—

1. If there had been 43 sheep in the field, and 25 were taken out, how many would have been left?

The child should be led to see that if the number 41 has been increased by 2, the number left will be increased by 2, and the previous answer of 16 increased to 18.

2. If 23 were taken out, how many would be left? (16 + 2).

3. If 50 were in the field, and the 25 were taken out, how many would be left? (16 + 9.)

4. If 44 were in the field, and 28 taken out, how many would be left? (16.)

If the children have been taught subtraction by the method of "equal additions"—a most logical and sensible way, as nothing has to be unlearned and its application to all denominations is easy—they will readily see that as the same number is added to each line the difference remains the same.

5. How many must be taken out of the field to leave in 20 sheep?

We want 4 more sheep in the field, therefore 4 less must be taken out—that is, 21.

As the children progress it will not be very difficult for them to see that if 41 be doubled and 25 be doubled, the difference between twice 41 and twice 25 will be twice 16, or 32. And as advance is still further made they may be led to see that if the number in the field is 42, and the number taken out is 24, an increase of 1 placed in the field and a decrease of 1 taken out makes a difference of 2, and therefore the answer is 18.

I think that in this matter of addition and subtraction I have shown sufficiently how the teaching should travel. The critic may think these exercises have been unduly spun out, but it is because experience has taught how extremely necessary it is that a sound foundation should be laid on intelligence, that exercise after exercise has been given, so that the children may *grasp* and *realise* that there is in number a building up and a pulling down, similar to what there is when the box of miniature bricks is employed in constructing a certain building represented in the picture, and demolishing that building for the purpose of erecting another of a similar or different pattern.

From the examples given in *addition* and *subtraction* very few in *multiplication* and *division* will suffice, for the teacher will have seen from the foregoing exercises the aim to be pursued, and will be able to frame his own on the lines set forth. Therefore I shall briefly touch on multiplication and division.

An example in *multiplication*:—

I have 3 bags, and 15 oranges in each; how many oranges have I?

15
3

45 oranges.

The next step will be to ask how many oranges there would be if each bag contained 14 instead of 15, and the child led to reason that the total of 45 drops to a total of 42, because 45 is decreased by 3. Secondly, if 17 oranges were in each bag, the teacher will lead the scholar to the conclusion that 3 times 2 must be added to the 45, which then becomes a total of 51, and it will interest the child to see that by multiplying 17 by 3 it gets the same total. Thirdly, the question may follow:—

From the last answer find how many oranges would be in 4 bags, each holding 17—namely,

51 + 17, or 68;

and in 2 bags, each holding 17—namely,

51 − 17, or 34.

These results can be proved by working out—

4 times 17, and
2 times 17.

Finally, the child may discover the number in 6 bags, each holding 17 oranges, in two ways—namely,

68 + 34, and
17 × 6.

Just a few examples in *division*.

A man has 41 oranges. He divides them equally among his 3 sons; how many will each child get?

3)41
13 + 2.

The answer should be stated thus:—

Each son will receive 13, and there will be 2 over.

The next question will follow thus:—

How many must be put to 41 so that each boy will receive 14 and none be over?

The teacher will lead them to see that in order to give 14 to each child the man must have 3 times 13 + 3, and as he already has 3 times 13 + 2, only 1 more will be wanted to give 14 to each.

The connection between remainder and divisor may be further impressed by the following examples:—

1. To give 3 children 14 oranges each, 42 are needed. How many must I have to give them 16 each?—namely,—

42 + 3 times 2, or 48.

2. How many to give them 20 each?—namely,—

48 + 3 times 4, or 60;

and this will be proved by finding that 3 times 20 is 60.

And before leaving the work of Standard I., let me impress upon the teacher the importance of presenting the exercises to be worked in as varied a form as possible.

Children will readily get the correct answer to the following:—

There are 24 oranges in a bag, and then 36 are put in the bag; how many then?

That is, if put down thus,—

24
36

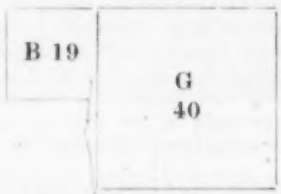
but if put on the blackboard thus, 24 . 36, it seems to present increased difficulty.

Again—There are 40 girls in a school, and 19 boys; how many more girls than boys?

It seems much easier for children to get the correct answer if the sum is put down thus:—

40
19

than if this statement is made with the accompanying diagram.



There are 19 boys in a room, and 40 girls in another room; how many more girls are there than boys?

If Exercise 25 in Nelson's *Continuous Mental Arithmetic* were worked on paper or slate with more difficult numbers than those given in the mental example, the children would have their powers of reasoning and calculation greatly strengthened.

Lastly, exercises similar to the following might be given with advantage:—

A man has 5 fields containing sheep, thus:—

123
65
204
421
13

He sold the sheep in the largest field. Find in the easiest way how many he had left?—that is, cross out 421 and add together the remaining 4 numbers.

Then this might be proved by subtracting 421 from the total number of sheep in the 5 fields. This again might be followed up by requiring them to find out in the two ways given above the number of sheep the man would have remaining after selling those in the largest and also the smallest field. Such training as this will enable them to intelligently tackle any kind of problem which does not travel out of the limits of the work required of Standard I.

I was in a school a short time ago, and Standard II. at the arithmetic lesson were divided into two sections, A and B, and the following sums given:—

A. Find the cost of 4 books at 2s. 8½d. each.

B. A man earns 2s. 9½d. a day; how much will he earn in 4 days?

The sums were, after the children had worked them, taken upon the blackboard thus:—

s.	*d.*
2	8½
	4
10	9

s.	*d.*
2	9½
	4
11	2

and then erased. No attempt was made to indicate how the second answer might be obtained from the first by questioning, thus:—

1. How much greater is 2s. 9½d. than 2s. 8½d.? Ans. 1½d.

2. Then what must I put to the 10s. 9d. to get the second answer? (1½d. × 4.)

3. How much is this? Ans. 5d.

4. Then how do I obtain the second answer? (Add 5d. to 10s. 9d.)

5. What would this amount to? 11s. 2d.

The next example to follow should be:—

Add 2s. 8½d. to 2s. 9½d.

s.	*d.*
2	8½
2	9½
5	5½

Then this might be given:—

Find the cost in two ways of 4 books at 2s. 8½d. each, and the cost of 4 books at 2s. 9½d. each.

	s.	*d.*
1.	2	8½
		4
	10	9

s.	*d.*
2	9½
	4
11	2

10s. 9d. + 11s. 2d. = £1, 1s. 11d.

2. 5s. 5½d. × 4 = £1, 1s. 11d.

From this the children might be asked, knowing that 4 times 5 shillings is £1, to say, without working, what would be the cost of 4 books at 5½d. each.

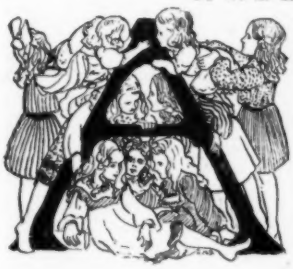
THE NEW CHILD'S GUIDE.—We have had the pleasure of examining Part I. of Messrs. Harmsworth's new venture, *The Children's Encyclopædia*, which is as attractive and interesting as its title is forbidding. Full of bright reading (in large type) and numerous pictures in colour and black and white, it will be eagerly welcomed in every home.

Our Art Section.

SOME WELL-KNOWN BRITISH MEZZOTINTERS.

IV.—SAMUEL COUSINS, R.A.

BY W. E. SPARKES.



A RECENT writer has proved by a long list of notable examples that precocious children do not always burn out their ability at an early age. It is a popular fallacy that children with natural gifts beyond the common reach their grand climacteric in their teens, and afterwards live a life more ordinary than the comfortable cit, dull to the point of exasperation.

In art certainly there are many bright exceptions to this rule. Sir Thomas Lawrence, P.R.A., the son of a feckless innkeeper at Devizes, when still in pinafores and strap-shoes, added considerably to the family income by drawing from the life the portraits of many of the fashionable people who passed through Devizes on their way to Bath to pass the summer season.

Curiously enough, Samuel Cousins, afterwards so closely connected with Sir Thomas Lawrence in art, attracted general attention for his precocious ability to hit off a likeness. He was born at Exeter in 1801, where his father was a tailor. There appears to have been nothing artistic in the boy's upbringing; indeed, Miss Charlotte Nooth, a minor poetess of the day (whether founding her lines on authority, or introducing her pretty figures of speech merely to meet the exigencies of rhyme), was decidedly uncomplimentary to the tailor's household.

For those were the days when it was become the fashion to discover talent among the poor, the days when Bloomfield's "Farmer's Boy" was welcomed as a heaven-inspired poem by persons of taste and learning, some of whom, indeed, discovered excellences in minor poetry that have hardly stood the test of time.

Young Samuel Cousins first made his name by drawing portraits of the commercial travellers who put up at the Globe Inn, near his father's house. One suspects him to have been something in the way of an advertisement for the old inn, since he was always near at hand to put down his top and hoop at a moment's notice to draw the head of any sufficiently enterprising bagman who should wish to have himself handsomely done in outline by this astonishing child.

The young artist not only drew from the life but he copied from pictures. Struck by a happy thought, the father put these pencil drawings in his shop window, where they were often seen by the commercial travellers or the more fashionable passengers to Bath who had put up at the Globe Inn. No doubt their attention was drawn to these budding works of art by the interested landlord; but the advantages were not to be entirely on his side, for it so happened that Captain Bagnold of Knightsbridge, passing through Exeter in 1812, had his attention drawn to the pencil drawings by this clever schoolboy, bought a few, and sent them up to the Society of Arts in London with a note on his discovery.

The society (whose existence is indicated in its title, "For the encouragement of the arts") was always commendably keeping its weather-eye open to detect genius and to encourage it. The good tailor and his family at Exeter were agreeably excited at learning that Samuel had been awarded a silver palette "for an admirable pencil drawing of the portrait of Ben Jonson." Such a reward meant much in those days. It meant, among other things, the certainty of a boy's work being seen and appraised with sympathy by the members of a society with a laudable desire to help clever but poor artists; and when next year young Samuel Cousins obtained a "silver medal for a drawing of the Magdalene, a copy," he might be said to have placed his foot on the lowest rung of a ladder that would carry him to dizzy heights.

This was the occasion when Miss Charlotte Nooth (name, alas, unknown to fame) wrote a poem with the deliberate intention of securing patrons for the boy—

> "No classic study gave his Fancy play,
> Or Science beamed upon his early day.
> Dark is his humble dwelling, cold and drear,
> Perplexed with sounds to vex the studious ear;
> The House of squalid Poverty supplies
> Few forms of Grace to charm a painter's eye,"

a poem which, while it does not say much for its author's powers of poetry, cannot be said to lack local colour. It would have been interesting to hear the family's comments on these pleasing lines so prettily drawing attention to the "cold and drear House of squalid Poverty," though, it is true, the lady proceeds handsomely to make amends by appealing to the "Sons of Opulence" to "bid their well-directed bounty flow" in the direction of Exeter, where a bright boy in somewhat perplexing surroundings was looking anxiously along the London road.

The results were satisfactory enough. With powerful influence and minor poetry to back him, young Samuel Cousins found himself invited to work under a very clever engraver, S. W. Reynolds, who offered to take the boy without a premium—a most unusual proceeding in days when artists and engravers bound themselves in apprenticeship to masters, and learnt all the mysteries of the trade. It was at least a thorough system, though it had, too often, a cramping influence on a clever lad.

Samuel Cousins was an exception. His innate power of catching a likeness stood him in good stead, for it brought him in contact with people little likely to trouble themselves in ordinary circumstances with the mere apprentices of a successful engraver. But Cousins had been taken to see Kean the actor, whose remarkable head he drew from memory, and engraved it too, though at that time (1815) he could hardly hold the graver.

Such skill was then uncommon. It brought Cousins to the notice of such men as Mr. Alexander, the Keeper of Prints, and resulted in that gentleman sitting for his portrait, which was drawn and brilliantly engraved by the clever young artist.

S. W. Reynolds, his master, was a first-rate mezzotinter, practising the art mainly in copying portraits, a work for which Cousins, with his skill in drawing faces and his sympathy with portraiture generally, was particularly well suited by nature to excel in. It is not surprising to find him busily engaged while yet an apprentice in wandering over the country from one mansion to another to copy in mezzotint the fine family portraits painted by such first-rate masters as Sir Joshua Reynolds Gainsborough, Romney, and Raeburn, and eagerly bought up when published in mezzotint.

Naturally, Cousins was not yet a master. His style in mezzotint was not fully formed. He had reached that critical stage in an artist's life when a powerful influence, one way or another, should mend or mar his artistic future—an influence such as Samuel Palmer acknowledged when he met that strong personality, John Linnell, and afterwards thanked Heaven for sending John Linnell "to drag him from the slimy pit of modern art."

Cousins and Lawrence.

Cousins was a superb craftsman. He knew by training and by instinct how to modify his handling to get the strongest or most subtle effects; he was an excellent draughtsman, and had the makings of a fine portrait-painter. Yet he does not reach the station of some mezzotinters who certainly had less original power. The reason is not far to seek. Just at the critical point in his career his work was bound up intimately with an artist who was then hailed as the "Raphael of English art," but whose art has not stood the fiery test of time, which, while it has refined the fame of Reynolds, Gainsborough, and Raeburn, has clouded the fame of that most fashionable and petted of all artists, Sir Thomas Lawrence.

The connection came about in this way. Cousins had finished his connection with S. W. Reynolds in 1826, and starting in life on his own account, received his first commission from Sir Thomas Acland to engrave in mezzotint "Lady Acland and her two sons" by Sir Thomas Lawrence. Needless to say, Cousins was extremely successful. More than that, he was so successful that Lawrence himself, delighted with this first essay, gave him a commission to engrave "Master Lambton," the mezzotint of

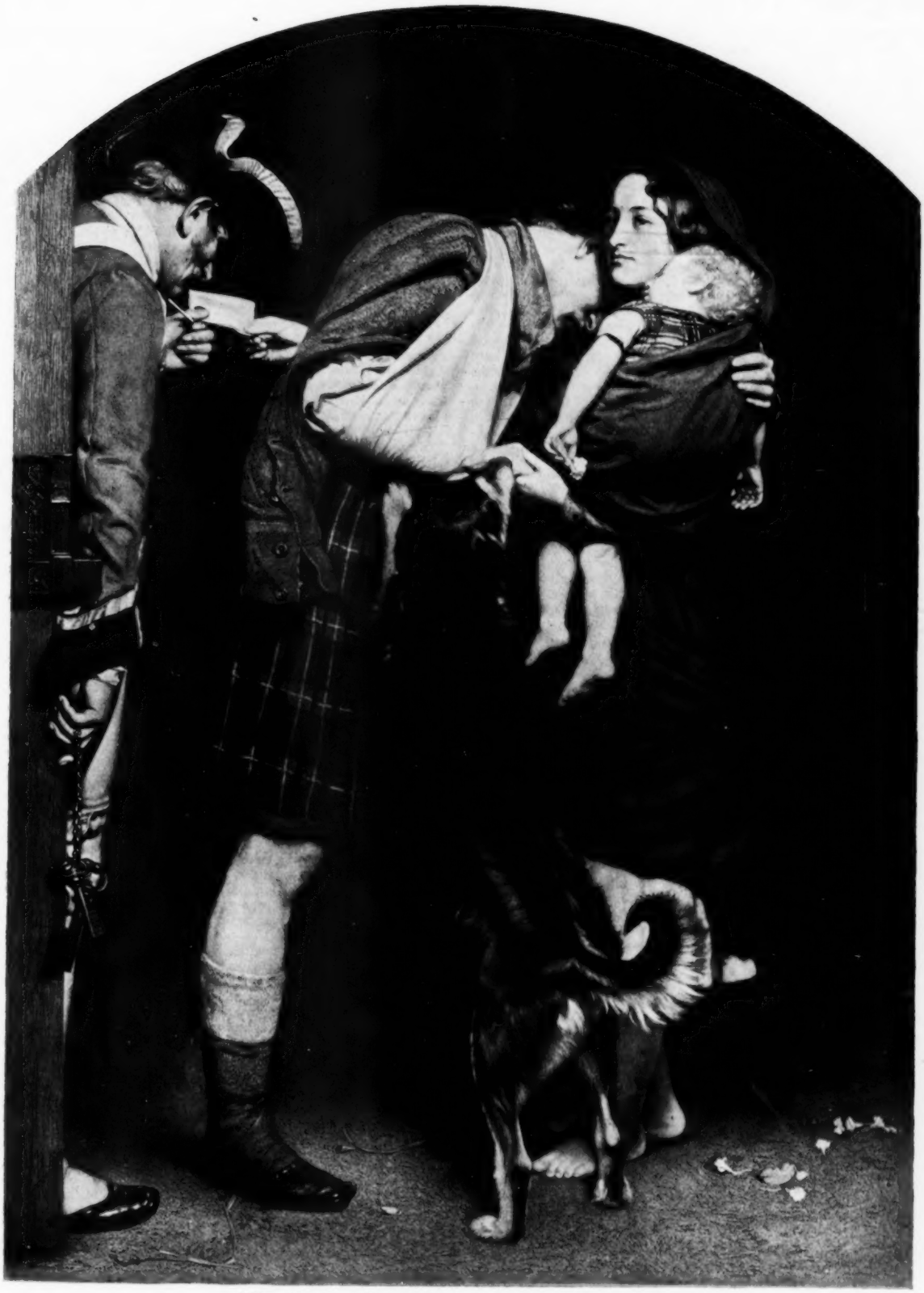
which is reproduced in this number. This was the beginning of a close connection, so that, indeed, the two names Lawrence and Cousins, as artist and engraver, are indissolubly fixed in art; for Cousins engraved no less than thirty-three plates after paintings by Sir Thomas Lawrence.

During this time he occasionally copied from other artists,

"Master Lambton." By Sir Thomas Lawrence, P.R.A.
(Photo by W. Rice.)

and notably one after that fine Scottish painter, Raeburn, reveals a strength and an insight on Cousins's part that shows only too well how much the art of mezzotint has lost by his being continuously engaged in translating the "honeyed sweetness" of Lawrence rather than the manliness of Raeburn or the earlier English school.

For, after all, Lawrence was not among the greatest painters. He had been an infant phenomenon, petted by the rich, always with a large *clientèle* of fashionable and even royal patrons, and doomed eternally to make them sparkle and shine. It was an overdressed age, without the magnificent repose that characterises the Elizabethan court, where, if a man did carry a country estate on his back, he wore it handsomely; whereas, when the noble George the Fourth was king, display was not excused by an artistic wearing. There were silks, satins, gold, lace, and jewels galore, a vulgar ostentation that called attention in strident tones to the material rather than the wearer; and the misfortune of Lawrence was that he was brought up in this atmosphere,



"The Order of Release." By Sir J. E. Millais, P.R.A.
(Photo by W. Rice.)

so different from the calmer, well-bred, if somewhat artificial, society in which Reynolds and Gainsborough lived.

There is a charm in Lawrence's portraits due to his ability to hit a cheerful, if superficial, expression in the face; there are bright contrasts in colours and shades. Among his many poses, apt sometimes to border dangerously on the theatrical, are some delightful for their natural effectiveness; but beside the sober intensity of Gainsborough, or the charmingly restrained harmony of Reynolds or Romney, or the natural seeming so common in these earlier portraits, the paintings by Lawrence are found wanting in supreme art.

Cousins was engaged for many years engraving this art. Like the paintings themselves, the mezzotints were extremely popular, selling as fast as they could be reproduced, and swelling the banking account of an engraver in days when most engravers had a struggle to live.

He is not to be blamed, indeed, but praised for having so exactly hit the spirit of Lawrence in these mezzotints. As was pointed out in a former number, this was the choice excellence of that fine mezzotinter Earlom, who varied his practice with his subject, so modifying his handling and so steeping himself for the time in the artist's spirit that the engraving exactly reflected the painting even to its style. But in Cousins's case this continual forcing of lights and darks, this everlasting translating of brilliant material, seemed at last to force him to see only through another man's eyes, so that when he came to engrave artists other than Lawrence he was not always so successful in catching their spirit and in projecting their views as such men as Earlom or Pether would have been.

"Master Lambton." (By Sir Thomas Lawrence, P.R.A.)

Sir Thomas Lawrence painted few children, though among these are some of his most popular works, and perhaps none more so than "Master Lambton." This pretty boy was the son of J. G. Lambton, Esq., M.P., afterwards the Earl of Durham. The portrait represents him in his seventh year. It is perhaps strange to modern taste, and certainly differs essentially from Sir Joshua Reynolds's delightfully simple portraits, such as the "Age of Innocence," in which that marvellous painter maintained a simplicity proper to childhood by a quiet dress, child-like expression of face, and apt surroundings. We are charmed with "Master Lambton" because the artist has struck a happy, careless pose, as of a child seated in natural grace; but though the face is beautifully regular, we miss those almost intangible shades that distinguish the child from the adult. Master Lambton, seated on a rock on the hillside, looks up at the sky not as a child might look into fairyland, but rather as one of older years contemplating the stars. Capitally painted as the velvet dress may be, and skilfully as the stretch of country may have been caught, there is in this portrait just that suggestion of theatrical pose and stage scenery which somehow jars when one compares it with the paintings of children by greater painters.

This is not due entirely to the dress, for one instinctively recalls Gainsborough's marvellous "Blue Boy" with his gorgeous deckings. It is rather that Lawrence, for ever employed in painting great folk, who insisted with painful emphasis on posing gracefully in purple and fine linen, was unable to dissociate even the children from those adventitious aids to elegance. There is a pathetic interest in this picture: the child died a very few years after, in his thirteenth year. It has always been among Cousins's most popular engravings, though of late years, with the declining popularity of Sir Thomas Lawrence's paintings, the mezzotint has suffered a slight eclipse.

"The Order of Release." (By Sir J. E. Millais, P.R.A.)

"Master Lambton" was engraved in 1827, when Cousins had barely commenced an independent career in art. The plate, indeed, was only the second upon which his name appeared as the sole engraver, though it is known that, while working in conjunction with S. W. Reynolds between 1822-26, he had mezzotinted no less than eighty-nine plates, chiefly from portraits after Sir Joshua Reynolds. The "Order of Release," however, was engraved in 1854, long after Cousins had been acknowledged the prime engraver in Europe. It is in reality a *mixed* mezzotint—that is to say, the engraver had used other means in addition to the rocker and scraper to get his effects, just as Earlom had done in former years, when he had found it necessary to lay a groundwork of etched lines upon which to work.

Needless to say, this plate is wonderfully engraved. It is in itself a liberal education in the art, exemplifying all the strokes, all the methods for obtaining various effects, and especially in expressing textures.

Sir John Millais was a marvellous painter. It has been said that where one man would have been content to see two or three shades in white, Millais would have painted twenty according to the texture and light. He was the great painter of men and women—a modern Velasquez—one who was interested in the world and its inhabitants, one to whom nothing was common. His immense sympathy made him embrace, understand, and express every phase in life; and though he shrank instinctively from the coarse and vulgar, he seemed to get his happiest inspiration from poverty and simple life.

But he had his dramatic vein too—witness the "Huguenot," the "Stoning of St. Stephen," and the "Order of Release," in which, with the true pre-Raphaelite outlook, he concentrated the emotion, but made it none the less intense, so that the tying on of the handkerchief in the "Huguenot" is as dramatic as the grasping of hands in the "Order of Release;" and both, because they keep within the "modesty of nature," are therefore more stirring than all the extravagance of stage emotion.

For Millais had broken away from the violence that was in fashion when he began painting. The first work he exhibited at the Royal Academy ("The Death of the Inca") is crowded with figures in vigorous action, wonderfully painted for a boy of sixteen—for Millais was also an infant phenomenon—but yet wanting in that intensity which more often in nature shows itself in a glance or in a simple movement—the *stillness* (as Carlyle says) of infinite motion.

One never misses this from Millais's mature work. In the "Order of Release" the figures might be called impassive, yet within these upright and undemonstrative lines what a world of emotion is expressed by the simplest and most natural actions: the man's head falling on his wife's shoulder; the sleeping child (tired out while the formalities that release the father are stretched out to the last, and typical of the weariness spread over long months of suspense); the jailer removing his insolent pipe, and showing respect to the military order of release; the dog, leaping to kiss his master's hand. It is all so natural, and therefore so stirring and convincing.

A whole world of trouble lay hid behind the Jacobite rebellion. Battles and trials have their picturesque side in history; but this is as though Millais gently pushed aside the gaudy trickery and showed the foundation, the individual home-trouble, upon which the tragedy in court or on the scaffold was but a scene for the public eye.

And it is not by accident that all the composition of this picture is concentrated in the wife. One must remember how carefully Millais thought out every detail. It is not without reason that the man's and the child's head alike rest on her shoulders, for she alone had hoped against hope, struggled in the face of despair, and succeeded in the end. The triumphant hand bears the magic order, and thrusts away the jailer and his prison cell; and the man's half-apologetic attitude is emphasised by the fact that he hangs the keys, unconsciously, behind him.

For in Millais's painting every small thing counts. The child had carried a bunch of primroses, but had dropped them to the floor, where they lie suggestive of the spring and the sweet open air; while under the Highlander's foot are a few stray straws dragged from the cell—a pretty parable enough.

Cousins's skill in catching something of the magnificent drawing of heads and hands in this picture; his success in distinguishing the textures, wool, cotton, steel, varying his methods and handling with each, employing here lines, there dots, and here again broken lines and mezzotint; his fine management of gradated lights—these, in sum, are the elements that combine to form one of the triumphs of the engraver's art. It has the faults of its success. Its brilliancy and strong contrasts are perhaps more proper to paintings by Lawrence and Landseer than to the scholarly harmonies of Millais; while the very extensive use of lines and stipple almost removes the plate from among genuine mezzotints. But Cousins knew the importance that attaches to details in Millais's paintings, and he has slurred none of them. It was the painter's attachment to common things, and his insight in reading parables in them, that made Ruskin praise him beyond most. "So far as Millais saw what was beautiful in vagrants, or commons, or crows, or donkeys, or the straw under children's feet in the ark (Noah's or anybody else's does not matter).....in the Huguenot and his mistress, or the ivy behind them.....he prevailed, and rightly prevailed, over all prejudice and opposition; to that extent, he will, in what he has done, or may yet do, take, as a standard-bearer, an honourable place among the reformers of our day."

Ruskin wrote that in 1878. Eight years after, he added: "Looking back now on the painter's career—crowned as it has lately been by some of the best pieces of freehand painting in the world—I am more disposed to regret his never having given

expression to his power of animal painting, wholly unrivalled in its kind, than any other shortcomings in his actual work."

The dog in the "Order of Release" is one of the few animals painted by Millais, but serves to show his power in action and texture.

Samuel Cousins engraved after most of the leading artists of his day. His success was such that he achieved his ambition—to have official recognition for engraving among the fine arts. In 1837 he was one among others to petition William the Fourth to allow engravers to become members of the Royal Academy; and, though disappointed then, engravers had the keen pleasure of seeing in the catalogue of 1855 a work described as by an "Associate Engraver of the New Class, Samuel Cousins, R.A., elect." In 1867 he became a full member.

He was now in his sixty-sixth year, but he continued to engrave for many years, dying in 1887 at the end of a long and honourable life. He is described as a "gentle and generous spirit." He left £15,000 to the Royal Academy for the assistance of poor artists. "He was one of the most sincere, most modest, and most simple-hearted men who ever followed in the footsteps of art."

THIRD INTERNATIONAL ART CONGRESS, LONDON, 1908.

A Meeting held at the Mansion House, February 12, 1908.

THE fine Egyptian Hall was crowded in every part by teachers and others interested in the teaching of drawing. The Lord Mayor, having welcomed the audience, called on Professor Beresford Pite to give a short account of the aims and objects of the congress.

Professor Pite pointed out the increased interest taken in drawing, and referred especially to its value in applied art. The craftsman nowadays must be much more than mechanical; he must be artistic. Apart from this view of the value of drawing, its supreme importance in training the mind to appreciate beauty must not be forgotten. The Art Congress about to meet would necessarily be occupied in considering these phases of drawing, and for this purpose it was all-important to have an opportunity of learning what was being done both at home and abroad. He hoped the congress would be welcomed in accordance with the importance of the principles to engage their attention.

The Right Hon. the Earl of Carlisle was next called upon to offer the first resolution: "That it is desirable that the Third International Congress for the Development of Drawing and Art Teaching and their Application to Industries should be received in London in a manner worthy of the traditional reputation of Great Britain for hospitality and international courtesy."

He expressed himself as adverse to all cast-iron systems in teaching drawing, which were apt to lose all vitality. He further pointed out the undesirability of so many opposing bodies each with its own ideal, but apt to do harm by their antagonism. There was everything to be gained by a comprehensive exhibition of work and systems which could be compared in relation to their methods, their aims, and their results. It was therefore fit and proper that the representatives of foreign systems should be received with hospitality and the courtesy due to an event of international importance.

Lord Avebury, in seconding the resolution, said that though his own drawing had been rather diagrammatic than artistic in the way of studying science, he considered that drawing was second only—if it was, indeed, not of equal importance—to writing. The importance of training the eye to see accurately and the mind to appreciate beauty was paramount. Very few of us could see what we should see. The very use of the word "overlooking" this or that, pointed to the recognition of the common habit of looking at a thing without really seeing its contents. The eye learns through the mind, and the mind through the eye. Lord Leighton had said that the material prosperity of the country runs not merely upon the stability of its manufactures, but upon the beauty of their design. Drawing, then, should not only enable us to appreciate beauty in nature and in works of art, but it has an importance upon the actual prosperity of a country.

Sir Swire Smith, in supporting the resolution, quoted a remark by Lord Salisbury at a conference on technical education twenty years ago. "Man's necessity is to live; his first duty is to work, and the object of education is to fit him for his work."

Formerly we in England had no rivals in our machine-made goods. Manufacturers in those days had no knowledge of art. But the great Exhibition of 1851, while showing our supremacy in machinery, revealed also the hideous designs upon which our fabrics were constructed. England saw for the first time that foreign nations excelled us in beauty of design. Under the Prince Consort's initiative it was determined to rectify this vital error. More thought must be paid to the artistic training of the craftsman.

From this grew "South Kensington" and the schools of arts that were scattered about the country. In the "'seventies" it was recognised that foreign productions had improved materially, while their design was still ahead of the materials in this country. The Royal Commission of 1881 discovered that three-fourths of the children in this country did not learn drawing, and that though the schools of art were doing good work, not one in a thousand of the children were in training at these higher centres. It was different enough abroad, where there were palaces built for art teaching, in which drawing, modelling, and technical education applied to local industries were numerous and successful.

It is true that vast improvements have been made in England during the past twenty years. Manual instruction and drawing were universally encouraged, and never had the art schools been more prosperous. In many trades, notably in textiles, we more than hold our own. The experience of these years has proved conclusively that the art faculty is as strong among Englishmen as among foreigners. At the same time we must be prepared to learn from abroad. The army to be feared in the future was not the heavily-armed, but the one that made most use of the peaceful arts.

The second resolution was proposed by Sir L. Alma-Tadema, O.M., R.A. It was to this effect: "That as the revenues of the State cannot be applied for this purpose, application should be made to local authorities, public bodies, and private citizens to provide such funds as are requisite."

Sir L. Alma-Tadema emphasised the importance of teaching how to combine both the useful and the beautiful in our manufactures and crafts. Unfortunately, there was always the question of money, and though the quest of the "mighty dollar" was not everything in this world, money was needed to encourage art. He knew that our art education was second to none. He would therefore ask that public bodies should not be sparing of their pennies. The artist must be encouraged, for the sake of art. The study of the beautiful was useful both to the mind and the body. The man who surrounded himself with beautiful things that he could appreciate must necessarily enjoy a fuller life.

The Duke of Marlborough, in seconding the resolution, said that he had no doubt the foreign delegates would receive a fitting welcome and a hospitality. What city was more suitable to receive such delegation than this great city in the heart of the Empire? London had done much for art. Her museums were full of fine things. Unfortunately, Governments do not give money in support of congresses, and appeals must be made to the great city companies, who were among the first to aid educational enterprise, and after these to other public bodies and institutions, for the well-being of our workmen would depend more and more upon artistic culture.

Sir Gilbert Parker, M.P., supported the resolution. He thought it a pity that Governments did not support such congresses. There was no doubt that without drawing and the cultivation of taste in our manufactures we shall fail in competing with foreign nations. Without taste and beauty in these, we shall be courting a national disaster.

Mr. Pierpont Morgan has promised a donation of £500 to the funds of the congress.

CARDBOARD MODELLING FOR JUNIORS.

BY FELIX T. KINGSTON.

THE models this month continue practice in drawing the square and the oblong, with more difficult subdivisions. Longer lines are involved in the exercises, necessitating greater precision in the use of ruler and set-square; but in no case are the figures more complicated than those usually drawn by pupils in the Second Standard. The material used will be brown paper, as suggested in the previous article.

Model No. 5.—A Pencil Box.

Each child will require a piece of material about 10″ × 6″. The drawings are self-explanatory (Figs. 8 and 9). Cut out along the thickened lines (Fig. 8), and score the dotted lines. Fasten the flaps on the outside of the box. The whole of each square at the corners is not required, and the shaded parts may be, if

preferred, cut away, in which case less adhesive will be needed; if kept intact the two flaps will exactly cover the end of the box, and will materially strengthen it.

At this stage children will be able to work from the drawing

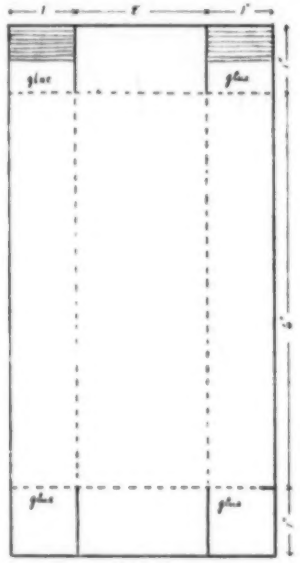


FIG. 8.

without any assistance from the teacher. It is a good plan to keep a large copy of each drawing hung up during the lesson, so that each child may proceed without the teacher's help from the point he reached during the previous lesson.

Complete the drawing by marking off the half-inches at the corners, and joining the points obtained to the corners of the inner square.

Cut out the figure ABCD, and cut also along the lines MW, NX, etc., taking care not to sever the paper beyond the points W, X, etc. Score the dotted lines, paying special attention to the corners of the inner square.

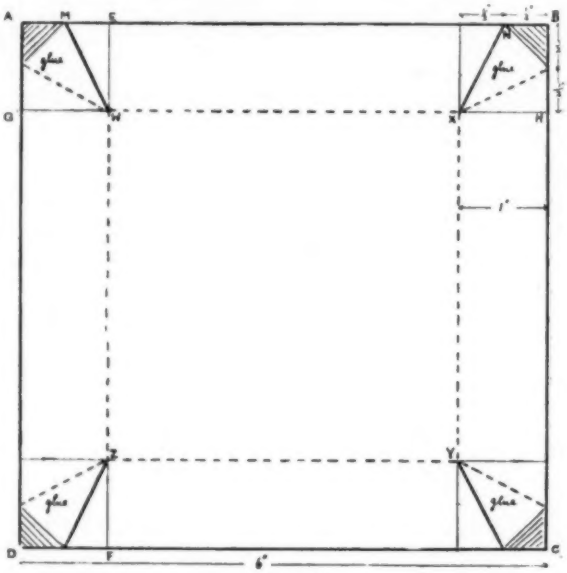


FIG. 10.

FIG. 9.

MODEL NO. 6.—A TRAY.

Draw the square ABCD, 6" side (Fig. 10), and test its accuracy before making any subdivisions. Mark off the points E, G, etc., 1" from its corners, and join EF, GH, etc. The pupil should again test for errors by measuring the figure WXYZ, which will be 4" square.

Continual testing of the model by the child at every stage of its construction will ensure that no irremediable defect passes unnoticed, and will promote the habit of attention to correctness of detail, without which no good work is possible; while it gives the pupil control of the work at every step, enabling him to detect flaws in their initial stages instead of leaving this task to the teacher, and so prevent irretrievable disaster, which the accumulation of trifling errors is sure to bring about. Furthermore, it will neutralise the tendency to hurried work, which seeks to secure the product without being careful about the process, and it must be remembered that only the process, and not the product, is educative.

Fold the paper, keeping the drawing outside, and ascertain whether it is going to make a good fit.

Lay the model flat on a piece of wastepaper, with the drawing downwards, and give the flaps the thinnest possible coating of seccotine. One corner should be glued and fastened before another is attempted. After fastening the model at A, it is best to proceed to the opposite corner at C, as this will avoid any immediate handling of the sides which meet at A while the glue is setting.

The shaded parts at A, B, C, D may be cut off after the model is glued up. The finished model is shown in Fig. 11.

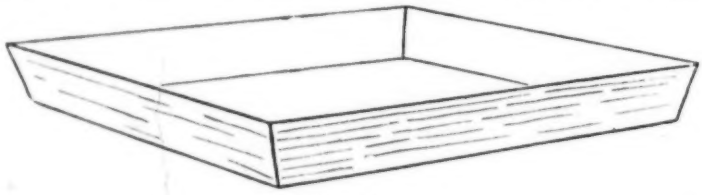


FIG. 11.

MODEL NO. 7.—AN ENVELOPE.

Draw the oblong ABCD (Fig. 12), 8" × 5". Mark off the points E, F, G, H ½" from the corners. Join EF, GH, and complete the figure. Score the dotted lines, and cut away the shaded parts. Glue the flaps on the outside, and fasten them inside the model out of sight. The edges marked X may need a little more cut from them to make the model lie flat.

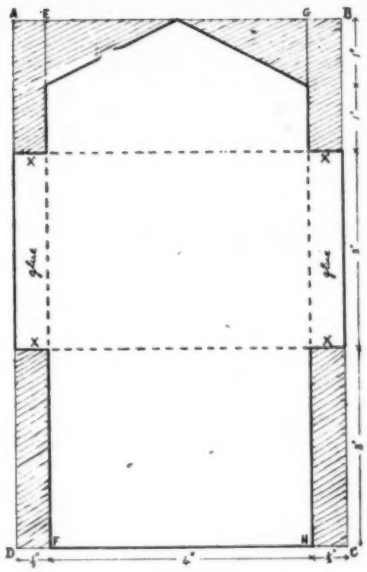


FIG. 12.

When finished it should be 4″ × 3″ (Fig. 13). The envelope may be made out of white paper, if the teacher so desires, and given to the scholar for his own use. It will afford the little worker much delight to be able to make an envelope which he may really send by post.

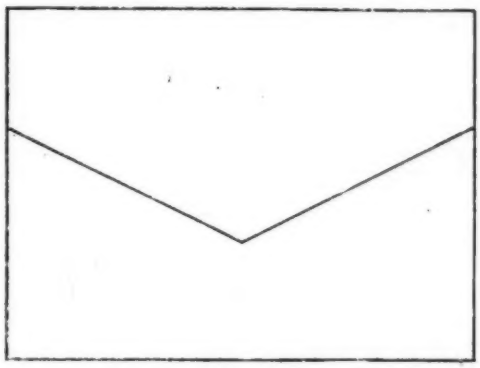


FIG. 13.

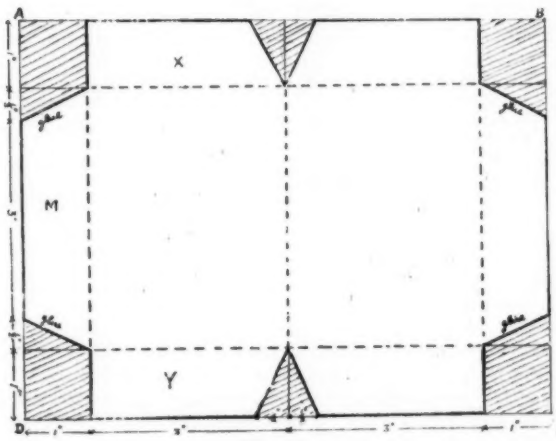


FIG. 14.

MODEL NO. 8.—A BOOK COVER.

Construct the rectangle ABCD 8″ × 6″ (Fig. 14), draw lines inside parallel to the sides at 1″ distance, and complete as shown.

First cut out the whole figure, and then cut away the shaded parts. Score the dotted lines, and fold the flaps marked X, Y, keeping the drawing outside as before. Glue ½″ (not more) of the ends of the flap M, and fasten to X, Y.

EDITORIAL NOTES.

TWO important papers on "The Cultivation of Artistic Perception in Children" were read before the North of England Conference at the beginning of January. That by Mr. Jahn, headmaster of Sheffield School of Art, is given in the current issue; Mr. Pearce's paper was given last month. Mr. Jahn's paper is full of the mistaken ideas usually held by men in his position. He assumes that the art instinct is inherent in every child, that expression by drawing comes naturally, and that any attempt to "teach" children crushes their spontaneity. Without doubt drawing is the most universal and natural mode of expression to young children; but however good the will may be, the actual power of expression is very feeble, and in many instances altogether non-existent. He says: "Children will interpret nature quite freely and spontaneously if they have no hackneyed examples to copy from;" and a little later on: "I do not advocate shoddy or eccentric work, or encourage in any way careless execution, or faulty drawing and inaccuracy." These statements are directly contradictory. Careful execution and accurate drawing are not the result of a child's spontaneous work. They are the direct outcome of careful and laborious teaching, guidance, and supervision on the teacher's part, and hard work by the pupil. The go-as-you-please, self-development idea may suit an odd genius now and again, but for the vast majority a carefully-graded course produces the best result, educationally and artistically. Instruction is a vital and necessary part of education.

Of course all teachers should encourage to the fullest extent *self-effort* on the part of the pupil. The lack of this is probably the crying weakness in the teaching of drawing to-day. The teacher sees for the children instead of teaching them to see for themselves. Even in much of the so-called object drawing a sketch is made on the blackboard which the children copy, with little or no reference to the object. This is the worst form of drawing from the flat. The teacher must demonstrate; indeed, he may fill the board again and again with sketches if necessary, but they should all be directed to explaining principles, which the pupils should carry out for themselves. Concurrently with careful tuition spontaneous work should be encouraged. The more the better.

Mr. Jahn also pleaded for the specialist art teacher, and said that "elementary art teaching is seldom in the hands of those who have had a sound art training." This may be so, but it is not altogether the teacher's fault; and it certainly would not improve matters to reverse the situation and put in the highly-trained artist, with no powers of teaching. Mr. Jahn must recollect that it takes quite as much time, thought, intelligence, and energy to become an artist in teaching as it does to become an artist in art or any other profession, and that the teaching profession is no longer the refuge of the halt and the maimed. His assumption that good teaching requires no effort is about as fallacious as his ideas of the inherent art capacities of children.

In the discussion that followed, Mr. Morris of Sheffield, whose intimate knowledge of elementary schools and scholars, as well as his special knowledge of art, combated Mr. Jahn's ideas with some very practical remarks.

We would once again remind our readers that the columns of the "Art Section" are open to them just as they were in the *Art Monthly*. The chief desire is to give as much practical help in school work as possible, not only in art, but in any other subject. If you need advice on any point, do not hesitate to write. The editor would also welcome any suggestion as to articles which would be of service at the present time.

THE arrangements for the International Congress on the Teaching of Drawing are gradually assuming final shape. Special attention is called to the report of the important meeting at the Mansion House given on page 527.

SOLUTIONS TO THE PERSPECTIVE EXAMINATION PAPER.

April 27, 1907.

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(The value attached to each question is shown in brackets after the question. There are diagrams to all questions except Question 3.)

Q. 5.—Diagram Q. 5 shows in perspective a line HT, lying on the ground plane; this is the line of intersection with the ground of an oblique plane, receding from the spectator upwards, and inclined to the ground at an angle of 30°. A is a point on the oblique plane. Put into perspective the plan of the cross shown in the diagram, lying in the oblique plane with the long lines of the shaft at right angles to HT. The point A, corresponding to A^1 of the geometrical diagram, is to be the foot of the nearest edge of the shaft of the cross. Complete the cross, making it of the thickness shown by the end elevation. The horizon, centre of vision, ground line, and distance of the eye from the picture are given. [Thirty marks.]

The horizon must be drawn across the short way of the paper, 5 inches from the top, and the centre of vision placed 6 inches from the left-hand edge of the paper.

Note.—The given HT^2 produced finds the vanishing point of direction on the horizon, and also on the GL at X a point on the picture line of the oblique plane. The vanishing parallel drawn at right angles to that of the HT finds VP_2. From its measuring point MP^2 the inclination (30°) is drawn to obtain AVP_1, the vanishing point of inclination. A right angle at MP^2 also finds the vanishing point of perpendiculars to the oblique plane at AVP_2. AVP_1 and AVP_2 are on the vanishing line of vertical planes perpendicular to the oblique plane.

The measuring points of VP and AVP^1 on the vanishing line of the oblique plane are used to determine the outline of the cross, and in order to find these the position of E_2 is necessary. The outline sizes are measured on the PL of the oblique plane, and the thickness on the IL of a vertical plane drawn from VP^2 and containing A. The traces of the planes are indicated by chain lines.

Q. 6.—Diagram Q. 6 shows in perspective the main lines of an ancient ship floating in still water. The line A tends to the vanishing point VP; the lines B and C lie in the vertical plane passing through the longitudinal axis of the ship. Trace the reflections that would be visible on the reflecting surface of the water RS. The horizon and centre of vision are given. [Twenty-eight marks.]

The horizon must be drawn across the short way of the paper, 6 inches from the top, and the centre of vision placed 6½ inches from the right-hand edge of the paper.

Note.—The reflections are vertically under their respective points, and at a distance below the water-level equal to their heights above it. The line A, with its reflection A_1 and the vanishing points VP and VP^2 are in a vertical plane, the horizontal trace of which is found by joining the base of the mast at the water-level to a point on the horizon (VP_2) vertically over VP. To find A_1, first obtain the reflection of D at D_1, and then draw from E through D_1 to meet the two projectors dropped from the ends of the line A.

Section B.

Q. 7.—Diagram Q. 7 gives in perspective a rectangular slab lying on the ground plane, and on its upper surface a point A. Show the height of A above the ground; find the distance of the eye from the picture, and show the distance of A within the picture. [Six marks.]

Note.—Draw from CV through A. This line is horizontal at a height above the ground equal to that of A. At C drop a vertical to find D, and carry forward to B. The height of A appears at A_1B. The distance between the vanishing points is bisected, and a semicircle described with X as centre contains the eye at its intersection with the principal visual ray drawn from CV. PD may now be found, and the distance of A within the picture A_1C determined.

Q. 8.—Diagram Q. 8 gives in perspective a portion of the main lines of a metal cross standing on the ridge of a roof. All the lines of the cross lie in a vertical plane inclined at an angle to the picture. Complete the perspective view of the cross in accordance with the small scale elevation in the diagram. The horizon is given. [Six marks.]

Note.—According to the given elevation the metal cross may be enclosed in a square, and the various points ascertained by means of a series of concentric squares with their diagonals and diameters. From the diagram the vanishing point VP of horizontals is found, and the given diagonal is a sufficient guide to complete the perspective of the square.

Q. 9.—Diagram Q. 9 shows in perspective a cabinet standing on a horizontal plane. Its sloping upper surface A is a double square; the height of the vertical surface B is one-fourth of its width. In each of these rectangles inscribe a border of the width indicated by the line C. [Nine marks.]

Note.—Find the vanishing point of long horizontal edges VPD, and also of sloping edges VPI. The diagonals of the oblique surface intersect at its centre, and these again may be equally subdivided by drawing the diagonals of the halves. These last provide the intersections of the border at the angles. The line C is carried over the vertical front at both ends, and one pair of diagonals at the nearer end determine the horizontal width of the border.

Q. 10.—Diagram Q. 10 shows in perspective a folding screen standing on a horizontal plane. The screen is formed of two leaves hinged on the line AB; each leaf is a rectangle of which the height is equal to twice the width. Find the distance of the eye from the picture and the centre of vision. Show the angle at which the leaves are inclined to each other, also the angle at which each leaf is inclined to the picture plane. [Twelve marks.]

Note.—The middle points of the nearer vertical edges of the screen are rotated on to the ground plane, and drawn back through A to find M^1 and M^2. The corresponding vanishing points V_1 and V_2 are found by producing the horizontal edges of the screen to the horizon. From these points the position of the eye is obtained. The vanishing parallels are inclined to DL at angles indicating the inclination of the leaves of the screen to the picture plane. The supplementary angle is equal to the inclination of the leaves to each other.

Q. 11.—Diagram Q. 11 represents in perspective a house standing on a horizontal plane. It is rectangular in plan, and has gabled ends which are symmetrical about their vertical centre lines. The drawing is inaccurate. Find the errors, and show how they should be rectified, assuming the lines of the gables ABC, DFG, and the base line KM to be correct. The horizon is given. [Twelve marks.]

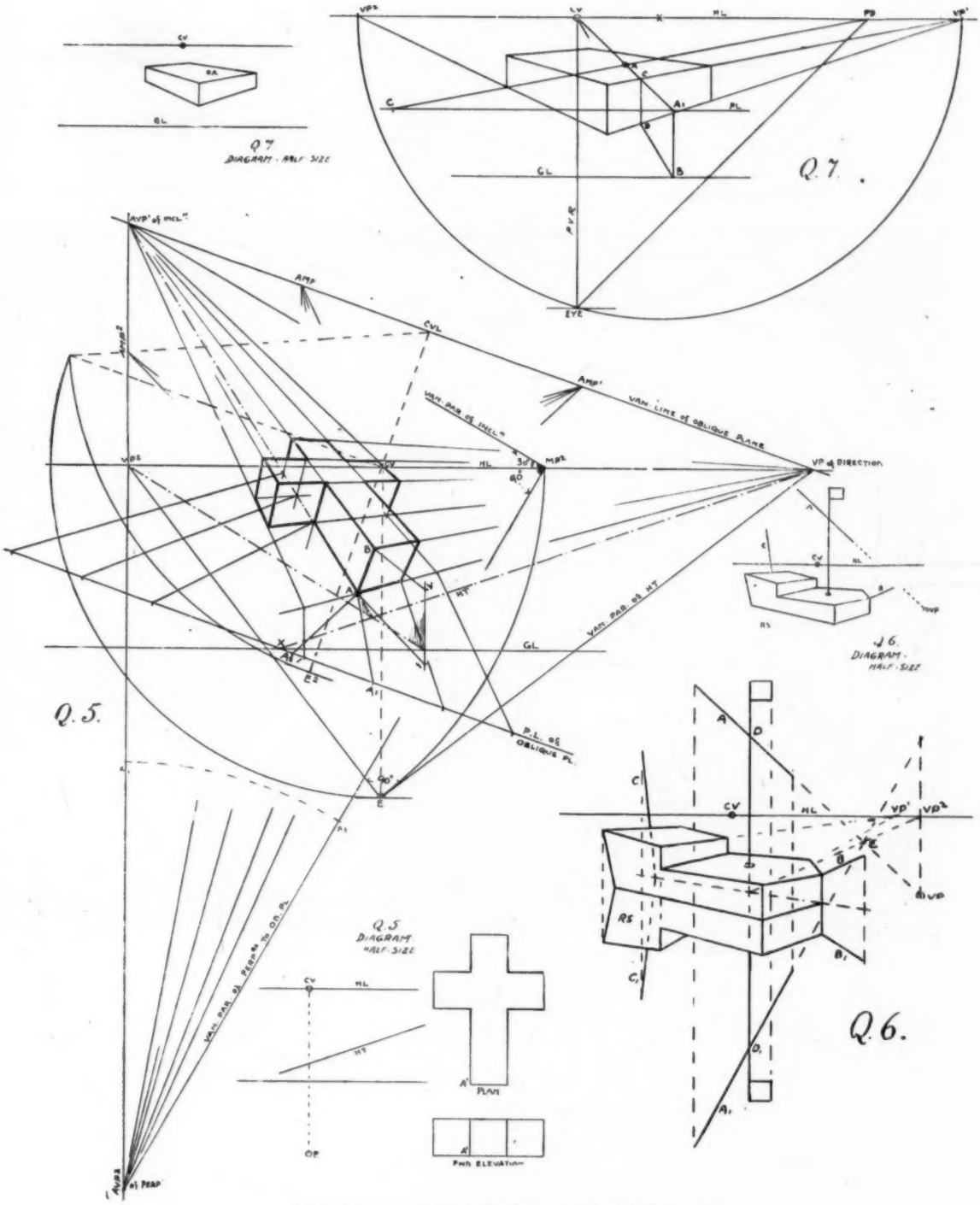
Note.—V^1, V^2, and AV^3 are derived from the correct lines KM, CA, and CB. The errors are marked with a cross. The correct position of E is found by producing FD to H, and drawing back through N, this last point being correct, as shown by the lines drawn to V^2 and AV_3 from O and D respectively.

Q. 12.—Diagram Q. 12 shows in perspective a man standing at A, a point on a horizontal road, the sides of which are perpendicular to the picture plane. B is a point on the continuation of the road, which here is a plane receding downwards from the spectator. CD, which is parallel to the picture plane, is the line in which the horizontal and the descending planes meet. F represents a cyclist's danger signal; it consists of an equilateral triangle surmounting a post. The triangle lies in a vertical plane, its base line being horizontal. At B erect a vertical line to represent a man of a height equal to that of the man at A. Find the distance of the eye from the picture, and the angle at which the descending plane is inclined to the ground. The horizon is given. [Eighteen marks.]

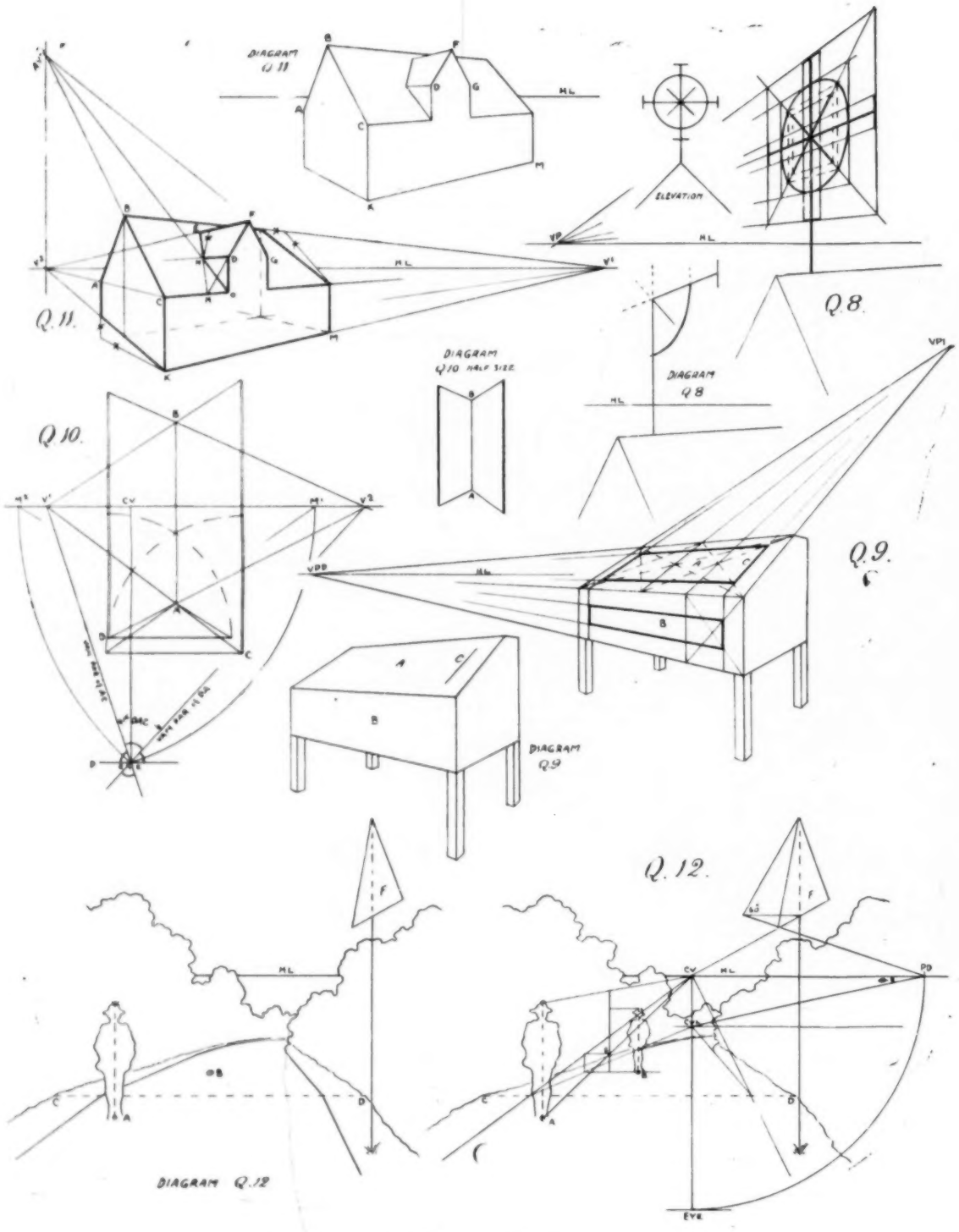
Note.—The solution depends on the fact that the true form of the signal is given. CV is found by producing the given edges of the horizontal road. PD is ascertained by rotating one-half of the signal into a position parallel to the picture plane. CVL is the intersection of the edges of the descending road, and the line from PD to CVL measures the declination. The height of the man is carried forward horizontally to E in a plane parallel to the picture plane and containing B. It is there dropped to the level of B and carried across horizontally.

Design for Schools. A Handbook for Teachers. By Charles Holland (Macmillan and Co.).

This manual has been prepared for the use of teachers in higher standard and secondary schools. It deals very fully with the principles of design, and plans out a four-years' course suitable for young art students. Each course consists of twelve lessons, and each lesson deals with some familiar plant, and shows its application to pattern. The work is brimful of suggestions.



SOLUTIONS TO THE PERSPECTIVE EXAMINATION PAPER.



SOLUTIONS TO THE PERSPECTIVE EXAMINATION PAPER.

PRACTICAL DRAWING LESSONS.

JUNIOR CLASSES.—II.

IN last month's notes great stress was laid upon the necessity for careful instruction in the manipulation of the pencil. The usual pitfalls were indicated, and certain methods which have been tried and found successful were recommended. It will be remembered that the principal thing to be insisted upon is delicate handling; the application of too much physical force in using the pencil or rubber always leads to disaster. The general idea with children is to treat the pen and pencil as one and the same instrument. This, of course, is not the case. By gripping a pencil too near the point the hand and fingers are cramped, and there is a tendency to press. A longer hold admits of free finger movement; and as the pencil is then in a slanting position, it glides more easily over the surface of the paper. It requires continual watching to break children off this bad habit.

With regard to pencil shading the same trouble crops up; only in shading it is spread and repeated many times over the space instead of once or twice at the margin when the drawing is done in outline. Such a result is very discouraging. To guard against it I find it advisable to give a few formal exercises, where the shading simply means filling in some easy geometrical shape with a flat or graded tone.

For instance, two or more circles about three inches diameter might be lightly sketched on one sheet. Do not let the children go over these sketchy lines with the idea of making them fine. This generally means making them hard and black, which in this case is not desired. Make it clear that as the drawings are to be done in light and shade, the outline is no longer of any value in the finished result. The sketch outline in preparation for any shaded drawing is merely put there as a scaffolding, something to show where the shade is to begin and end, therefore the fainter it is made the better.

In shading these circles, commence at the top left-hand edge with a series of parallel lines drawn quite close together, all equidistant and of equal strength and thickness. These may be made either by deliberate strokes of about one-inch length, lifting the pencil at the end of each and returning to the upper end again to begin the new one, or by holding the pencil more flatly on the paper and rubbing backwards and forwards while gently drawing the pencil downwards, so as to cover the whole space from top to bottom. Of course it will be impossible to cover the whole space thoroughly with the first rubbing, and it will be necessary to go back over it again and again. The second rubbing or series of strokes should make just a slight angle with the previous set; do not draw them in the same direction nor at too great an angle. In doing this it is of the utmost importance to watch the joinings and the outside shape. When finished, if there are any accidental black patches or white lines due to carelessness, they must not be left, but the pencil-point must be made to work carefully in the white lines until all irregularities disappear and the tone looks flat. This is better than using the rubber for the black marks; it is better not to touch the shading with rubber at all. Repeat exercises of this kind many times, and vary by grading the tone from light to dark, selecting different points, such as one corner, the top, or the centre, for the lightest shade; then gradually increase its strength as the shading proceeds. Where strong shading is required it is better to go over and over the ground, reaching the proper strength gradually, than to try to get it all at once by pressure alone. Of course experience will enable pupils to do this successfully either way, but it is the careless exertion of too much pressure and unequal spacing of the strokes which lead to irregular and unseemly shading. Even in these formal exercises, begin the habit of making the outline disappear with the shading; for such lines are useless when the pupil comes to represent actual things by light and shade. There are no boundary lines in nature, and if light and shade is properly done they are not required in the drawing.

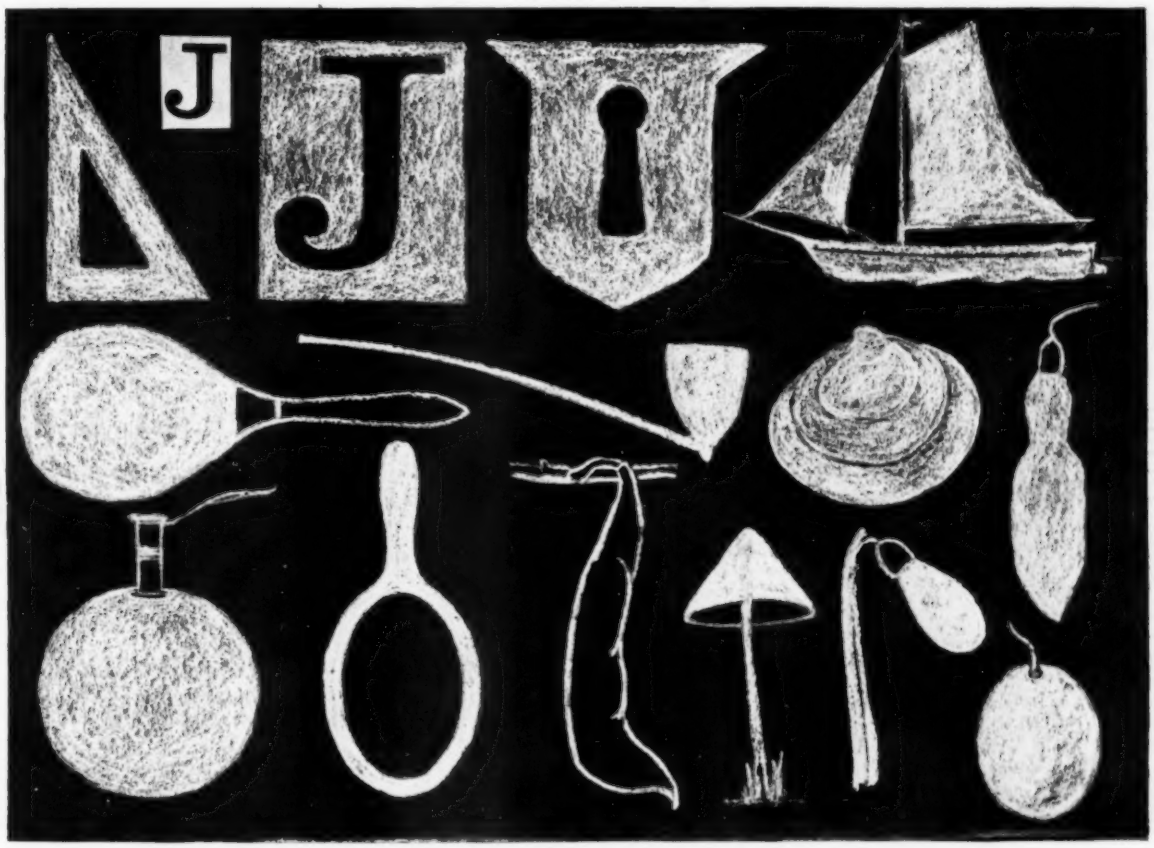


PLATE III.—CHALK DRAWING ON THE BLACKBOARD.

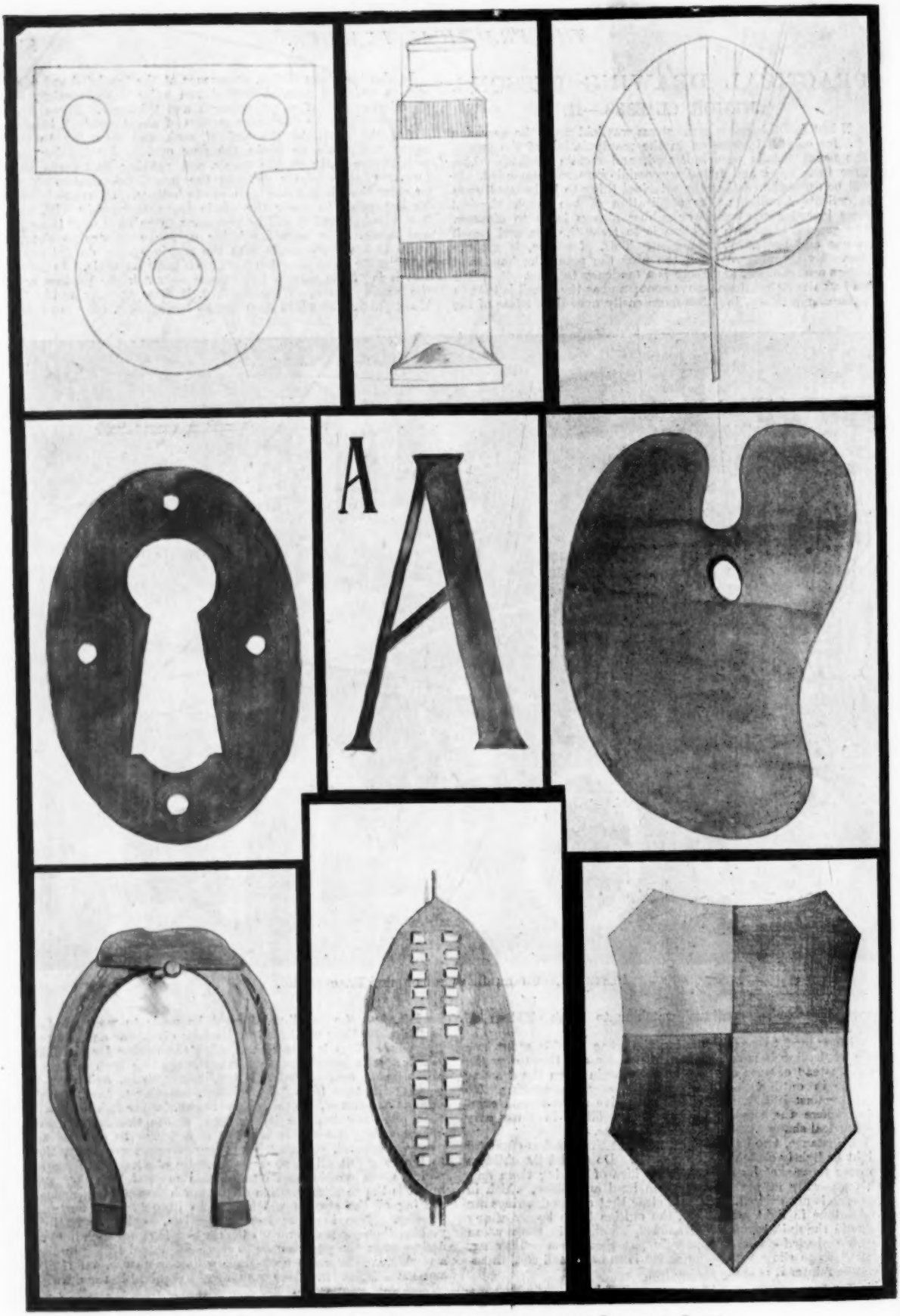


PLATE I.—EXERCISES IN OUTLINE, IN TINT, AND IN SIMPLE LIGHT AND SHADE.

When the pupils have gained more command over the pencil and brush, the teacher must give increased attention to the choice of material for study. Though still keeping well within the range of things which are flat or nearly so, and of solid types like the apple, it is quite possible not only to find objects which are more difficult to draw, but which will be also of more general interest to the pupils. Very often the children will be delighted to assist the teacher in this respect by bringing to school similar things to those given in the lessons. The collection of suitable objects does mean a little thought and trouble, but it pays in the end. A teacher strives to equip himself and his classes with all the best material in the shape of text-books, etc., for other subjects, and where the same attention is bestowed on the drawing lesson there will always be the best results. To take the lesson unprepared is to court certain failure. Sometimes a chance occasion may provide a better example than the appointed subject, and it would then be a pity not to seize the opportunity.

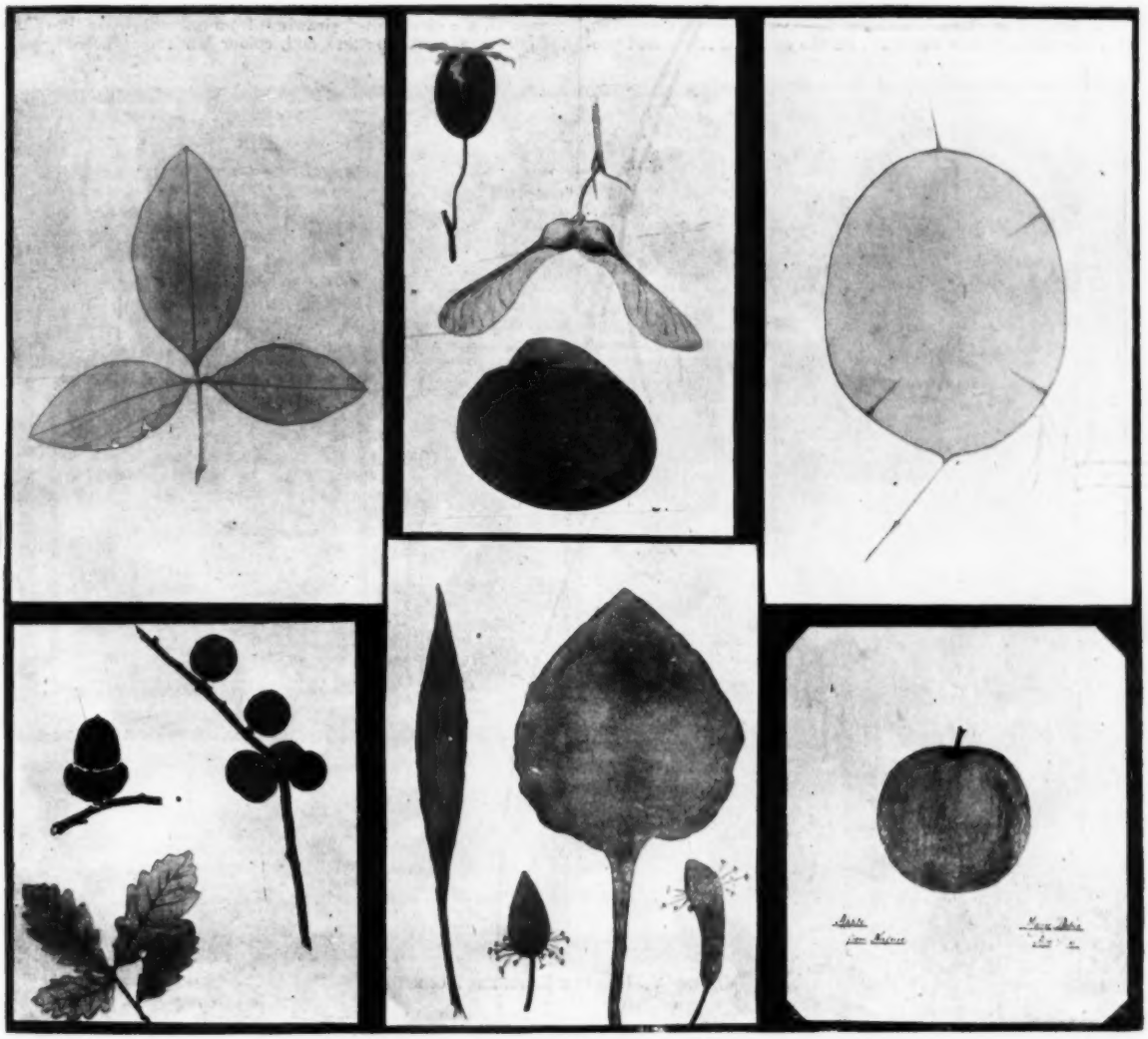


PLATE II.—NATURAL FORMS, IN MASS AND IN OUTLINE AND TINT.

In the illustrations which accompany these notes an attempt is made to have the selection of examples representative, and each one will suggest many others of a like nature. The Zulu shield shown here may not be available to every one, but most towns and districts have coats of arms, and these are generally emblazoned upon a shield. The policeman's red-cross badge and many of the prizes given in schools and for games are shield forms; any or all of these may be suitable for a lesson at this stage. And so with the other models. When the objects are large, one or two will be sufficient for the whole class; but anything in the nature of shells, fruit, or seed-vessels, or small objects such as a key, knife, or spoon, must be supplied in quantity, so that each child may have a model of his own. It will not be difficult to supply forty or fifty mussel or cockle shells; many of the fruits and seed-vessels can be preserved dry, and may be gathered in great quantity every autumn. Small common objects such as those mentioned may easily be procured on loan for the time of a lesson. Every effort should be made to vary the examples as much as possible in form, in colour, and in general interest. While doing this one must ever remember the stage of the pupils' advancement, and select things which are just difficult enough. At first this seems a hopeless task, and the novice can find practically nothing suitable; but as in everything else, a little perseverance in earnest searching generally reveals far more than ever could be gone through in one year. There are something like forty examples given in the illustrations, and the methods of working are varied in five or six different ways. This should be ample for a year's work in Class II., if a little design and memory drawing be given at intervals. The teacher who is conscientious and wishes to get the best out of his class must be always comparing progress by reference to former work. Any common weakness or general error should be noted, and such a lesson repeated until it has been thoroughly mastered. When repetition is necessary

it would be well to put fresh interest into the work by varying the treatment of the drawing. This can be done in many ways, such as mere change of position of the model or alteration of its surroundings, or, again, the medium might be changed. It will be found advantageous to introduce time sketches occasionally; repeat exercises are very suitable for these and for memory lessons. A memory for forms is of as much value as a memory for words and figures; while rapidity and directness gained through practice at time sketching will be of service all through the course. The work done in these lessons is apt to be rather discouraging at first—the children are even slow to try, so little confidence have they—but with a little insistence and taking the work regularly (always aiming at the cultivation of careful observation), much benefit will be derived from this type of work.

The beginning of each memory lesson must be a discussion, with the model before the class, on the essential forms and proportions of the object chosen for the lesson. It will help them at first to point out what features can be put down in the sketching, and what requires light and shade to fully represent it. Take, for instance, a ball of wool as a lesson. The sketch will give its outside shape and a few lines to indicate the direction of the more prominent windings, but to give some impression of its roundness and solidity a graded tone will be necessary for the shading. If points similar to this are properly explained with reference to the actual models, it will give the children some encouragement to begin after the models have been removed.

These memory exercises may also take another form, in which the children are asked to make their own observations of something away from the school, and to come prepared to make a drawing of it at their next lesson. Much variety can be introduced into the work in this way, though, of course, such exercises do not admit of the same accurate correction as in the previous method.

All "squared paper" should be avoided now, and the bases needed for pattern should be drawn by the pupils with ruler, set-squares, and compasses. This training in the elements of mechanical drawing is of itself of great value. There is a tendency at the present time—when so much drawing from nature and objects is insisted on—of losing sight of the necessity of giving children the power of using geometrical instruments accurately. Simple geometrical figures, squares, triangles, oblongs, borders, etc., should be made to given dimensions. The spaces may first be tinted, and the simple elements added to this tinted ground.

In Plate I. there are three studies of objects in outline, three outline drawings with the mass and colour values filled in with a tint of water colour, and three shaded studies in pencil. The dog-hip, shell, plantain leaves and flowers, and the acorn in Plate II. are direct brush drawings from nature; while the other studies are pencil outline and colour wash or shaded pencil drawings. Blackboard work is shown in Plate III., and the fourth illustration contains suggestions for a few lessons in design. On the right, at the top, Plate IV. contains a study from nature, and below it the same form has been used as the repeating unit for the decoration of a square. In the same way the circular space at the left has been filled by an orderly arrangement of three repeats of the acorn study shown in Plate II. There are also two suggestions for border designs, and these will be sufficient to give the children a lead in this direction. It is not desirable to give them more than a lead in these exercises, for the intention is to stimulate original thought and initiative. Sufficient restraint must be placed on the children to keep them on safe lines, but it is highly desirable that their efforts should not be in any sense a mere copy of these examples, or even like them.

They should answer the problem of filling the given spaces in their own way, and originality of arrangement and treatment should be encouraged, provided it is careful and orderly.

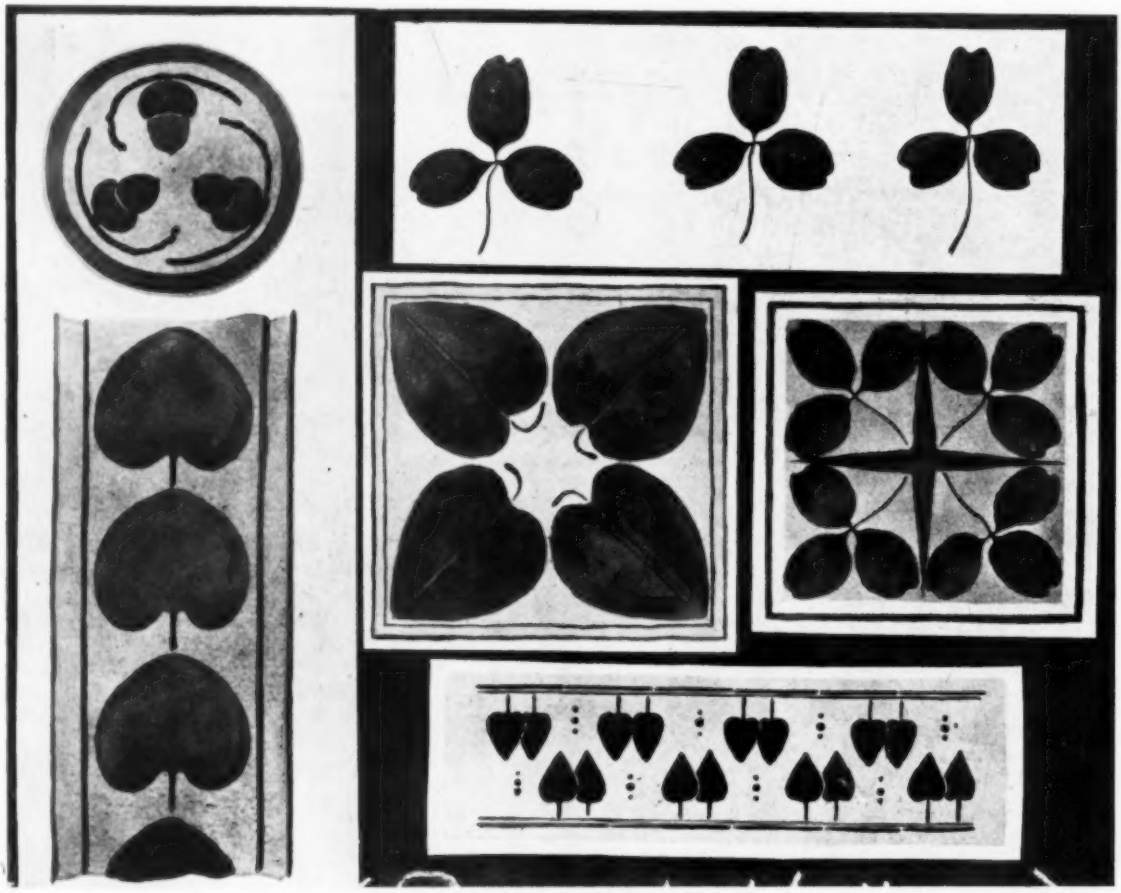


PLATE IV.—SIMPLE PATTERN WORK.

THE CULTIVATION OF ARTISTIC PERCEPTION IN CHILDREN.

(*Continued from page* 472.)

By A. C. C. JAHN, A.R.C.A. (Lond.), Headmaster Technical School of Art, Sheffield.

IN regard to the question of the cultivation of artistic perception in children, one naturally asks what is meant by this artistic perception, and it is to my view of the meaning of this question that I now ask you to kindly direct your attention.

I take it as meaning the realisation and gradual unfoldment of each individual's dormant sense of appreciation, exemplified in the recognition of the laws of beauty and ideality which dominate all aspects of nature. In a sense it is an individual training of the many, by means of which the acquisition of an infinite number of original conceptions regarding one and the same object or scene may be secured by each interpreter being enabled to enrich his particular rendering by adding something of his own unadulterated individuality to his work, thereby stimulating new ideas, thoughts, and sensations in the minds of others. It is a most interesting fact that no two people see the same things alike, and herein lies infinite possibilities; for while one will specialise form, another colour, another effect, and so on, there will be numberless subtle combinations and differentiations according to individual temperaments, and these will constantly ring more and more delightful changes in proportion as the true individuality of the artist can be fostered and kept pure. A merely accurate rendering in detail of an object, however delicately and carefully handled, lacks interest and power, unless it be inspired by something of the thought and life of its delineator. At no time has there been a greater tendency to teach children so-called art in a mechanical way than at the present, and a constant attempt is being made to pass the children through stage after stage of some adopted curriculum. This progression in set stages seems to be greatly sought after, and this is, in my opinion, mainly due to the following facts:—

Firstly, that elementary art teaching is seldom in the hands of those who have themselves had a really sound art training which can alone place a teacher in a position to properly follow and wisely direct a pupil's endeavours; so, lacking this training, the teacher resorts to some recognised syllabus as a kind of chart to work from.

Secondly, to examinations on more or less conventional lines, and reports by unqualified inspectors (as far as art is concerned), who are apt to encourage mechanical work; and

Thirdly, to the craze for producing show works.

I have lately seen certain drawings which were executed in one of the City Council schools, which were shown to me as being particularly good specimens—the school, by the way, priding itself on being strong in art. These works, which had been drawn by five or six students, consisted of drawings of plants from nature, and also from copies. They were of such uniform quality, and so mechanical in method, that I found it impossible to distinguish one student's work from another, or any difference between the plants drawn from nature and those done from the copy, and this in spite of most careful execution, showing a great amount of precision of detail, but obviously imitating some specially admired method. So-called art of this description is almost useless, to say nothing of the derogatory influence in the destruction of originality of style. The constant endeavour to cultivate new methods of art teaching can but imply that the hitherto existing ones have not been altogether successful, and if we once make that admission we shall be on the right way to alter it. If we ask ourselves how many of us there are who have really benefited to any considerable extent by our past art training in so much as to enable us to make practical use of the knowledge gained in an adequate expression of our ideas, I think we must admit that there are few.

I take it that the generally recognised methods of teaching art are at fault; it is not the fault of the child, who, I find, is generally fond of trying to express his ideas by means of pictorial representation. In my own experience I have come across a number of children who, before having had a single lesson in drawing, have made remarkably good attempts, showing not only keen observation, but also considerable memory power. Moreover, after having undergone the ordinary cut-and-dried instruction under an unqualified teacher, instead of the natural development of their powers, they have merely been stunted and nipped in the bud. My contention is that a child's artistic instinct may, at a very early age, either be put in a safe way towards healthy development or crushed for the remainder of his life, according to the method of instruction meted out to him. It is now generally realised that drawing of some sort is necessary as a part of one's general education, and various reasons are brought forward in support of this theory: for instance, that such a training teaches the individual to observe minutely and correctly; that it trains the hand and eye; that it is a universal language by means of which an intelligent description of any object may be expressed and a better idea conveyed to another's understanding than could be given by words alone. Other reasons have been advanced, but I need not enlarge on these, as the usefulness of art is now so generally understood.

Every child comes into the world with a number of potential possibilities. This may be said of art as well as of all other capabilities, and these can only be unfolded under the influence of time and sympathetic environment. As soon as any particular bent asserts itself—let us say a tendency towards artistic perception, however crudely it may be manifested—let us consider the best means of gauging the quality and scope of what is in the beginning only a germ, but which germ may be fostered and brought to a useful maturity by care and judicious training. This can only be done by taking the case individually, and putting the child into the hands of experienced teachers who will intelligently encourage and develop his original perceptions. Children are naturally not only most observant, but also most imitative and ready to adopt styles and methods of others at the expense of their own originality. To obviate this a child should be encouraged to look upon his drawing-lesson as a privilege and recreation rather than as a task; and the teacher's most important aim should be to arouse the child's interest by encouraging him to attempt to draw, as much as possible, the things he likes best from nature, memory, or imagination. I consider there is no better way of developing a child's memory and accentuating his powers of observation—thus enabling him to grasp the essential character of an object—than by encouraging him to draw from memory. Corrections should take the form of verbal advice and criticism, and in no case should a teacher correct a pupil's work by actual demonstration, as in corrections of that kind it invariably follows that the imitative power of the child then comes into play, prompting him to sacrifice his own originality in his endeavours to please his teacher. All mechanical methods should be scrupulously avoided—such as measuring, etc.

An accurate sense of proportion can be acquired by teaching comparison in relation to size and dimensions, and by the careful observation of general characteristics. Also avoidance should be made of all methods, such as perspective and lines of construction, copies, etc. Children will interpret nature quite freely and spontaneously if they have no hackneyed examples to hamper them.

At as early an age as possible the use of a pen, brush, chalk, etc., should be taught, as well as the pencil. I should say that no child should be taught by theory, principles, or methods until he has acquired a very fair amount of artistic perception, and until he is old enough to intelligently understand the value of such training without being thereby impeded in his original progress, or running the danger of falling into a mechanical style of work. There are a freshness and a living power in work which has been done under unconventional circumstances; and although it may lack some qualities which more stereotyped work may exhibit, it is infinitely more interesting and capable of arresting the attention, thereby giving out more successfully and directly its message to the world. By this I don't mean to advocate shoddy or eccentric work, or to encourage, in any way, careless execution or faulty drawing and inaccuracy. My theory is that originality should come first, theory and principles later on, which will ultimately give the necessary accuracy without endangering the all-important spirit of originality, without which there is no real life in art.

Artistic perception cannot be mechanically taught, but it can be judiciously cultivated, and it is during the comparatively early years of childhood that the best foundations for future progress are laid.

In conclusion, I should like to lay stress on the absolute necessity of primary art instruction being under the supervision of specialists. Only those who are well qualified art instructors should be entrusted with the responsible task of training the young idea to shoot, for the vast importance of properly directed preliminary training and the value of judicious and careful management in the treatment of originality cannot be overestimated. The main point that the teacher should bear in mind is not the usually accepted one—namely, that drawing trains the hand to accuracy and the eye to see correctly, but should lie, rather, in the realisation of the fact that it is the brain of the child that requires careful development, then the eye and the hand will take care of themselves.

The chairman suggested (and the meeting unanimously agreed) that they should send to Mr. Pearce an expression of regret at his inability to be present, and of thanks for his very interesting paper. He wished Mr. Pearce was present, in order to explain why he thought guinea-pigs were artistic objects. He was not perfectly convinced on that point, and should be glad to hear arguments from anybody who would speak on it. But he should like to endorse what Mr. Pearce said about the value of teaching children to admire animals. That seemed to him to be a most important combination of art and morality. He should even say that an advance in civilisation would be gained if children could be taught to love and respect animals, and to realise that the life in them was only another variety of the life which was in themselves.

Mr. I. H. Morris (Sheffield) said he was in complete agreement with both the writers on the subject of artistic teaching, but not as to the methods they proposed. Both of them, though writing of very young children, seemed to him to regard the question almost entirely from the point of view of the schools of art and the small class. While all true educationists should have ideals, it was essential that they should take things as they were, and regard the problem from a practical standpoint. They must, for instance, face the question that the school buildings for the majority of the children of the country were already in existence; that the furniture was there, and the great bulk of it would have to be used. Sixty children and one teacher was the main aspect from which they must regard the question. With those large classes and crowded classrooms there was not much room for the aviary or the small menagerie. Probably the latter, for hygienic reasons, would be better outside. It was to these huge classes and rooms full of furniture that they must put down most of the defects of the system. How could they get over these defects, taking things as they stood? He would not defend copies for a moment; they ought to be abolished. But there was a use for the diagram, though not for its abuse. Was it not possible that that was the explanation in many cases of diagrams being put before a class and used by the teacher? Owing to the size of the class, how could they put up a diagram for the use of each child, and where was the teacher going to get time to see each child individually? He did not agree with Mr. Jahn that all children had originality. He thought it was only the odd child who had the really artistic gift. There was no difficulty about cultivating that child. But the object of teaching drawing in the elementary schools, so far as the great bulk of the children were concerned, was to cultivate habits of observation, and enable them to record that observation graphically—to draw simple things. They must devote a considerable amount of their attention to the ninety-nine as well as to the odd one. It was quite true that all children were imitators; but was there any harm in the child who had not the artistic perception getting some good drawing or model? If there was a good method put before him, it was better that he should adopt that method than go floundering along in hopeless ignorance. He had certainly come to the conclusion that good methods, not abused but used with discretion, were most decidedly helpful and useful in every way. Let them work towards the ideal, by incorporating as many of the writers' suggestions as possible. If they could not have a greenhouse or an aviary, they could have flowers, shells, stuffed birds. But don't keep them in the school museum. Let the children see and handle them. Point out their beauties, and they would be doing something towards cultivating a love of the beautiful, if not the artistic perception. Pictures should be selected which the children could comprehend, and which could be useful for teaching. Fifty per cent. of the pictures in the Sheffield schools would be as well put on the fire. He could not go with Mr. Jahn as to the necessity for having specialists to teach the children. It was for the specialists to train the teachers. An ordinarily intelligent teacher should be able to deal with all the subjects in the curriculum of the primary school. With regard to Mr. Pearce's four suggestions, he very much questioned the desirability of children of nine or ten using tools in wood-carving. He pleaded for a little more time for art teaching—for all, if possible, but certainly for the lower part of the school.

Mr. C. Stephenson (Bradford) urged that, whatever general teaching they gave, they must have some definite points that would remain in the child's memory, like dates in a history lesson. Drawing from nature, with a child, was apt to be very dangerous, if that was to be the only point. A natural object might undergo change while it was being drawn—the petals of a flower, for instance, would droop. With forms, such as vases, that were clearly comprehended by the child, they would be able to demonstrate methods of drawing more accurately. If he had only one child to teach, he would adopt Mr. Pearce's method. He did not say, "Don't draw from nature at all," but he suggested that that form of exercise should only be an occasional excursion. If a child had observed a few things accurately, it was not altogether the matter of what he had observed that was important, but the fact that he had the faculty of being able to observe. He took it that the wood-carving meant by Mr. Pearce would be something very simply akin to sloyd. Colour harmony might be taught. When results were exhibited, they should consist of the whole of the class work, and not one or two drawings—the latter method was very unfair to the conscientious teacher. He was inclined to think that many schemes were made out on paper for the one clever child in a class, and did not take into account the rest of the pupils. They were told that children were fond of sketching figures, but because they were wrongly taught they let the faculty die. He thought they let it die, not on that account, but because their ideals grew very much higher, and they saw how far short of realising them they were. Some of the greatest artists in the world had been taught by rigid methods. It was strange how they had survived! He was not an advocate of any wooden method. He believed in trying everything they could devise to make a class interesting, and letting the children try different methods. He had found good letter-drawing a useful variation, and good geometric shapes, nicely coloured, were exceedingly interesting.

Mr. John H. Thompson (Birkenhead) considered that much of what had been said in the papers, good as it was, could not be carried out with all the "ologies" and "isms" that were crammed into children's education. Forty years ago he established an art school in Westmorland, and had ninety-two pupils, and he gave a lecture on the necessity of art as a part of education. Art used to be looked upon as an "accomplishment," like dancing at a ladies' school; but he contended that to a working-man's child it was an absolute necessity. He did not say they wanted to go in for it deeply, but, to a certain extent, art could be taught to a working-man's child, just as writing could. They might ask, What use was it? Well, he had often brought it before manufacturers, artists, engineers, and others, and they had said that a boy who had learned elementary art at school made a good workman in any trade requiring artisan skill in half the time that others required.

Professor Green (Sheffield) thought three different things—artistic perception, artistic production, and drawing—had been confused. He had no powers of artistic production, but he had considerable interest in art, and he should imagine that it was possible to cultivate artistic perception and a love for the beautiful altogether apart from attempting artistic production. The school beautiful was surely a most important help in that direction. They could not alter their buildings, but they could paint the insides beautiful colours at any rate. To try to teach little children art in any real sense of the word seemed to be attempting the impossible, but the teaching of drawing was possible. If the child was taught to draw as a means of expressing his ideas, then the teacher would gradually bring him face to face with difficulties. Where the child got into a difficulty, a lesson—say, in elementary perspective—would be necessary to enable him to get over it, but not until he had felt the difficulty in expressing the idea that he had got should that difficulty be introduced to him. In that way drawing would all along be an important part of his career. Not one in a hundred could become an artist, but the power to draw, to express ideas in line, would be preserved.

Mr. E. Snelgrove (Sheffield), though he had every sympathy in the direction indicated by the papers, could not think that the majority of the children had the artistic perception that was capable of any very great amount of training. It was very much the same with regard to singing. Those who had no voice or ear for music could not be trained. The object of teaching drawing in schools was not to make artists. They had to consider the best way of developing whatever faculty the children had for use in after life. They must have something to draw. The old plan of drawing lines, squares, and triangles was most uninteresting, flat, unprofitable. He cast about for something better, and it seemed to him that material was to be found in nature, and that drawing might be an aid to nature study. After many years' experience he had found that children were most interested in doing this class of work, beginning with simple leaves, then a few leaves on a twig, and so on, carefully grading the objects as the children's powers developed. In the old times they used to be satisfied if they got decent work from about a quarter of the class. Now, he got fairly good work from nine-tenths of his class, and there was not one-twentieth that did absolutely unsatisfactory work. He did not find that this class of work was detrimental to accuracy.

Our Prize Competitions.

RULES.

1. All French translations **must be received not later than April 8, 1908**, and addressed to:—PRIZE EDITOR, Office of *The Practical Teacher*, 35 and 36 Paternoster Row, London, E.C.
2. Competitors should cut out and send the *coupon* which appears on the Back Wrapper page of the current number. One coupon must be sent for each entry.
3. Competitors in No. I. should write pseudonym only on MS. Prize-winner will be asked to send name and address for publication.
4. No competitor may take the prize offered more than once in three months.

I.—FRENCH TRANSLATION COMPETITION.

A Prize of **Half a Guinea** is offered for the best rendering into English of the following extract:—

Puis, tout à coup, je m'arrêtai glacé, frissonnant de peur. Devant moi quelque chose apparaissait, quelque chose de sombre et de bruissant qui avait surgi de tous les côtés en même temps et qui semblait ne pas finir; une étendue en mouvement qui me donnait le vertige mortel. Evidemment, *c'était ça;* pas une minute d'hésitation, ni même d'étonnement *que ce fût ainsi*, non, rien que de l'épouvante; je *reconnaissais* et je tremblais. C'était d'un vert obscur, presque noir; ça semblait instable, perfide, engloutissant; ça remuait et ça se démenait partout à la fois, avec un air de méchanceté sinistre. Au-dessus s'étendait le ciel tout d'une pièce, d'un gris foncé, comme un manteau lourd. Très loin, très loin seulement, à d'inappréciables profondeurs d'horizon, on apercevait une déchirure, un jour entre le ciel et les eaux, une longue fente vide, d'une claire pâleur jaune. Pour la reconnaître ainsi la mer, l'avais-je déjà vue? Peut-être, inconsciemment lorsque, vers l'âge de cinq ou six mois, on m'avait emmené dans l'île d'Oléron chez une grand'tante, sœur de ma grand'mère. Ou bien avait-elle été si souvent regardée par mes ancêtres marins, que j'étais né ayant déjà dans la tête un reflet confus de son immensité? Nous restâmes un moment l'un devant l'autre, moi fasciné par elle. Dès cette première entrevue sans doute, j'avais l'insaisissable pressentiment qu'elle finirait un jour par me prendre, malgré toutes mes hésitations, malgré toutes les volontés qui essayeraient de me retenir. Ce que j'éprouvais en sa présence était non seulement de la frayeur, mais surtout une tristesse sans nom, une impression de solitude désolée, d'abandon, d'exil.

From "Le Roman d'un Enfant," by PIERRE LOTI.

RESULT OF THE MARCH COMPETITION.

The prize is awarded to "Rae." (Will "Rae" kindly forward name and address for publication?)

First Class. — Craigellachie, Robin, Surprise, Mund, M. E. W., Caudebec, Encore, Perpetua, Shakspere, Maid Margaret, Dix, Walpurgis, St. Mungo, L'exilée, Caen, Elterwater, St. Dié, Kettering, Asinères, Selaginella, Horsely Cross, Josephine, La jeune fille, Comet, Ângèle, E. M. E., Winnowsty, Scotia, St. Ternan, Helen Mactarvish, Violette, Gladiator, Alicia, Espérance, Eddystone, Helvellyn, Sesame, Yelof, Linby, Ra, Jostedalebrae, Ditat, J. G. G., Damocles, M. E. T., Lolla, Le sel, Paimpol, Gwynne, Beta, Conor.

Second Class.—Celt, Max, May, Oiseau, Mollie, Dee, Espero, Ariel, Margaret, Eilish, Pixie, T. G., Zoe, Rose, Fox, G., Richelieu, Portia, Lillhildaw, A. X., Pansy.

The name and address of "Chaunticleer," the winner of last month's competition are:—Mr. Harold Auty, Morley House, Sheerness-on-Sea, Kent.

REPORT.

The competition produced some very good papers, and not many distinctly bad ones. A few competitors got into a difficulty by not knowing that a *vers* is a "line" of poetry, and not what we in English call a "verse" or "stanza." Boys in English public schools are set Latin "verses" to do. Here the word "verse" is used in the proper sense of the Latin *versus* or French *vers*. *S'est laissé dire* proved a common stumbling-block. The absolutely literal translation of the phrase leads directly to its equivalent in English idiom. It was inevitable, we suppose, that one student should translate *colombe blessée* as "blessed dove," and another as "sacred dove." These mistakes were, however, trifling compared with what was done by two other competitors. One put it, "An Indian poet falls and wounds a joint in his foot;" another wrote, "An Indian poet saw a broken column fall at his feet." Nevertheless, each of these goes on to say that the Indian poet's heart "imitated the throbs of the dying *creature*." One of the first requisites of a good translation is that it should produce something sensible.

PRIZE TRANSLATION.

Many people, when offered a volume of poetry, say, "That is poetry; I never read it. It would be all very well if the book were written in prose." They are right, for almost always the work is nothing but prose hampered by metre. A college student ventured to say that a line of poetry consists of twelve syllables without elisions, concluding by a sound like that of the next line. Any one can manufacture such lines; it is mere joiner's work. Besides, he remembers that he made some in Latin, almost as well as Claudian, much more attractively than Virgil. Now that he is a custom-house inspector, or a retired officer, he polishes and arranges verses, composes fables, translates Horace, just as other men, his contemporaries, make boxes or cups and balls with a lathe. For my part I would rather be obliged to command an army than to write these terrible, incomplete lines: I think it more difficult to compose six fine lines of poetry than to win a victory. In such a case there would at least be the chance of having a fool for an enemy; my generals would act as my substitute; soldiers alone have been known to win the battle. But to find six fine lines of poetry! They are very different from incomplete lines. I think the reason that they have so much influence is that they carry the soul back to its sensitive and primitive state. The men who invented language did not note down objects by abstract signs like algebraists. In order to express them, they played in their very presence a characteristic drama and pantomime. They imitated events by their attitudes, cries, looks, and gestures; they danced and sang them. Legend relates that an Indian poet saw a wounded dove fall at his feet, and he, with his heart heaving with sobs, having imitated the panting of the dying creature, this rhythmical and modulated lament was the origin of poetry.

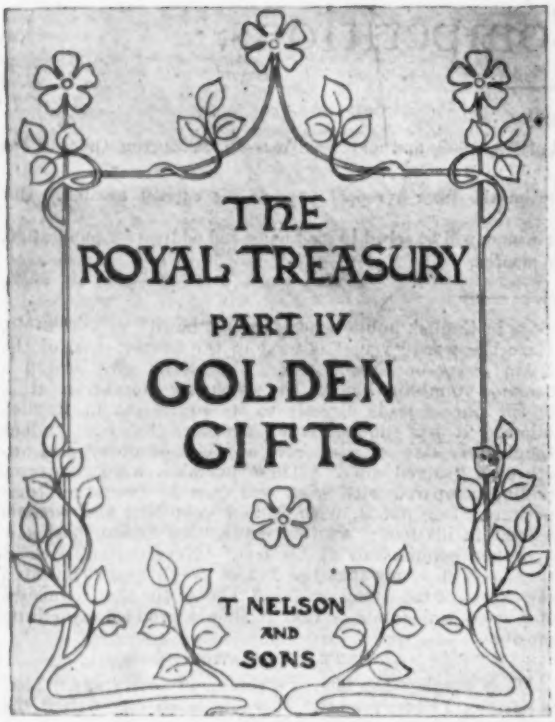
"RAE."

II.—COVER DESIGN COMPETITION.

The Prize Editor has received a large number of designs for the competition announced in last month's issue. The prize of *Half a Guinea* is awarded to

Agnes Daly, Upton Hall School, Upton, Birkenhead.

The winning design is reproduced below, reduced by about one-third. Future competitors are asked to note that it is selected for its simplicity and gracefulness, as well as because the title of the book is clear and distinct.



Consolation prizes of *Half a Crown* each are also awarded to

T. Lamont, Liverpool.
Constance Cook, Notre Dame Secondary School, Sheffield.
Henry Wilkinson, Secondary Day School, Gateshead.
Martha Duff, Upton Hall School, Birkenhead.
Frank Harper, Secondary School, Stockton-on-Tees.

The design submitted by T. Lamont is very delicate and tasteful, but the lettering lacks the boldness necessary for a book cover.

The following are highly commended :—

George Farthing, SS. Gregory and Peter's School, Sudbury.
Marguerite Stevenson, Secondary School, 28 West Hill, Wandsworth.
Kathleen Hynes, Secondary School, 28 West Hill, Wandsworth.
Editha Potts, William Gibbs School, Faversham.
Thomas Bolton, Holy Trinity School, Southport.
Walter M. Long, 98 Fort Road, Bermondsey, S.E.
Laura Hicks, Upton Hall School, Birkenhead.
Helen Hyslop Dick, Trinity School, Melrose.
Raymond Light, Cathedral Choir School, Winchester.
Doris Rowley, Holy Trinity School, Wimbledon.
Elsie A. Clinch, William Gibbs School, Faversham.
Frank Johnson, Sulyard Street School, Lancaster.
Halcot Whitehead, Sulyard Street School, Lancaster.
Harold Coates, Sulyard Street School, Lancaster.
Percy Hudson, Sulyard Street School, Lancaster.
Daisy Frost, Notre Dame Secondary School, Sheffield.
Maud Chapman, Notre Dame Secondary School, Sheffield.
Winifred King, Notre Dame Secondary School, Sheffield.
Dorothy Hinchliffe, Notre Dame Secondary School, Sheffield.
Henry Green, Boys' School, Coalbrookdale.

The examination of the designs submitted confirms the opinion long held by the Editor that greater efforts should be made in the ordinary school work to discover those pupils who possess that elusive quality *taste*. Some time at least should be set apart for the teaching of design in every school time-table; but the teacher ought, of course, to study the subject, if not deeply, at least with sufficient care to qualify him to suggest ideas of arrangement and composition. Advice on books to be used may be obtained through our Query Column.

III.—A NATURE STUDY COMPETITION.

A First Prize of *Seven Shillings and Sixpence* and a Second Prize of *Five Shillings* is offered for the two best records of original and unaided Nature Observations to be made during the month of April. Each competitor must first select the subject to be observed—a spring flower, buds, leaves, stars, bird, animal, or weather—and make a dated record of definite changes observed during the month. The competitive matter sent in should show careful observation of something worth observing, and may be accompanied by diagrams or brush-work.

Competitors must not be more than fifteen years of age. *Each* entry must be accompanied by a coupon from *The Practical Teacher*. Our readers are asked to send in only the best records, and to give in connection with each—

1. Name and address of competitor.
2. Age of competitor (last birthday).
3. Name of school and head teacher.
4. Name of class teacher if desired.

This competition is open until May 1.

EVA QUESTED,
Winner of last month's Essay Competition. *Teacher*—Miss Agnes Ramsden, County School, Folkestone.
(*Photo by Arthur Burgess, Folkestone.*)

THE Editor wishes to direct the special attention of his readers to a holiday tour now being organised by Mr. and Mrs. Fitchew, of "Sorrento," Norbury, S.W., who propose to take a select party to the Rhine, Black Forest, and Tyrolese Alps, leaving London on Friday, June 5, for eight or fifteen days according to choice. Those who wish to spend an economical, enjoyable, and profitable holiday are recommended to apply to the above address for particulars.

NOTES FROM THE NORTH.

BY ROBERT DICKSON, M.A.

FOR various reasons which need not here be discussed the system of primary school education in Scotland has, during recent months, been receiving in several quarters somewhat prominent attention. Jeremiads—for the most part anonymous—have been greatly in evidence in the public press of late with regard to the utter failure of our present primary school education. In their wholesale condemnation of all that is now being done in our schools, many have expressed a desire to return to the "good old days." True, there were some things in our past system that were in many ways superior to those that now prevail; but, on the other hand, some things were permitted which would not be tolerated even for one hour to-day. We do not wish a return in Scotland to the days when the whole success of a school consisted in the two or three "lads o' pairts" it sent as bursars to the university. Around these shone the searchlight of the whole village or parish, because in them a reflected glory somehow or other seemed to come to the district. It was the advantage of the few at the expense of the many. The result was not infrequently harmful both to the "lad o' pairts" and to the others. He was urged on at the expense of his health. The pathetic picture drawn by Ian Maclaren in *Beside the Bonnie Brier Bush* has its counterpart in many a Scottish village.

"The good old Days."

MANY of the criticisms being levelled against our primary schools are due to a wrong conception of what the function of an elementary school is. Some reforms, no doubt, are necessary in our present system, but what these reforms are is largely conditioned by what we hold to be the true purpose of a primary school. If its aim is to turn out all our children blocked to the same mould, made in the same pattern, ready at a certain age to pass certain examinations, then I do trust it can be truthfully affirmed that our present primary schools are failures. A school is not a machine; teachers are not mechanics; and, above all, children are not lifeless, inert masses of clay. They are living, sentient beings, each of them differing from the other, possessing certain tempers and temperaments, full of immense possibilities for good or evil. To develop or restrain these tendencies cannot be effectively, if at all, accomplished if the be-all and end-all of education is the fetish of mechanical examination results.

Function of the Primary School.

WHEN should a child enter school? The legal age in Scotland is five, but since the passing of the Education Act of 1901 there has been a gradual falling away of the number of pupils under six years of age. Last year there were only 68,815 under that age in the Scottish schools—a decrease of 3,071 since 1901. The question presents two aspects. It is to be remembered that in the poorer localities of our great cities the children have no playground but the streets. It is sheer social madness to allow these to grow up in squalid areas amid all the sights and scenes too frequently witnessed there. It is our duty to remove them at the early imitative stage of their lives, and there can be little doubt that the well-ventilated, cheerful, and pleasant classrooms of our modern infants' schools are decidedly better places for them than the kerbstones and the stairs. It is among the ill-doing and neglectful parents that we find a growing tendency to keep the children from school until they are seven years of age. This naturally leads to over-pressure, and causes forcing and cramming throughout the whole of their after school-life. The root meaning of the words "school" and "scholar" signifies leisure, and this is defeated in these instances. On the other hand, if the home conditions are good, I question if the advantages of enrolment at five years of age counterbalance the disadvantages. The children may be as well, if not better, running about, laying in a supply of health to fortify them against the future. I am convinced that to keep a pupil five years of age in a school for five or six hours a day, as is not infrequently done in many schools in Scotland, imposes too severe a strain on the growing body and brain. Could it not be arranged that the school day should only last, for the first year or two, from 9.30 to 12.30? Signs are not wanting of that reform in the direction of adding a year to the higher and taking one from the lower. Medical authorities, who are now taking a keener interest in this part of school work, are pretty well agreed that six is early enough.

Age of Entry.

THE question of irregularity of attendance is one that requires considerable attention, especially when it is considered that every day the schools of Scotland are opened there are no fewer than 102,107 children absent. This works out at 13 per cent., of which it is calculated that 5 per cent. is preventable. It is to a large extent by this 5 per cent.—the regular irregulars, the outer fringe of our school population—that our present system is being judged by those who are now finding fault. The remaining 8 per cent. may be absent from reasonable causes, but it is a noticeable fact that irregularity of attendance prevails most commonly where it does most harm both from a physical and educational point of view. The public require to be educated to the true value of education. There is a prevailing opinion that since the introduction of free education some parents have taken less interest in the regularity of their children. Certain it is that what costs little or nothing is not so highly valued. Elaborate machinery and expensive schools will avail little if the children are not to be found in the schools. That much of our lack of progress is due to this cause is the common experience of every teacher. For, as the slowest ship determines the rate of speed of the whole fleet, so these irregulars inevitably retard the progress of a whole class. A reform in this matter will repay the nation a thousandfold. I do not refer only to the financial gain—though at the present time much of our expenditure on education is so much money thrown away so long as this evil is permitted—but, more important, much educational and moral waste would be stopped.

Irregularity of Attendance.

ANOTHER reform that must come soon is a reduction in the size of our classes. It is agreed among all educationists that we cannot possibly educate in a true sense a child who is one of sixty or seventy, or even a hundred. Doubtless money is at the root of the evil, but surely money will be forthcoming for such a necessary reform. On our army and navy we spend

Smaller Classes.

millions, and though our schools are not inaptly designated "our first line of defence," on them we grudge a few thousands. We are penny wise and pound foolish. Education is not a dull, mechanical process—it must take cognisance of living, active intelligence—yet in how many cases are teachers, *nolentes volentes*, obliged to adopt mechanical agencies in place of methods well known to be more in direct accordance with the true spirit of education. The teacher, if he is to get the best out of his pupils, must be permitted to exercise on each individual child that strong personal influence which is so indispensable to the complete and harmonious development of all his powers.

ONE other reform I must refer to. The man in the street is complaining that the pupils attending our primary schools are receiving a little of everything, a mere smattering of subjects. Since the school is not intended to promote the material advancement of the pupils, but to develop intelligence and to make the best use of the school years available, much may be said for an extensive rather than intensive curriculum. Those, again, who favour the *multum non multa* in our curriculum say that our education would be all the better if the number of subjects to be taught were fewer. Variety can be carried too far. The number of hours available has not been increased during recent years, yet the number of subjects to be taught have been largely augmented. It is maintained by these that as good an education can be got out of one subject as out of five. My leanings are towards a more intensive curriculum. What I should like to see is the abolition of the hard-and-fast curriculum laid down in the Code. The freedom we as teachers were supposed to have obtained by the introduction of the New Code is not yet great enough. If certain subjects must be compulsory, all should not be, and no grants should be allowed to certain subjects in preference to others. On one point, however, I have no hesitation in saying there is no need for fads in our primary schools. This question of curriculum is one that will have to be seriously tackled in the very near future.

The overburdened Curriculum.

NO survey of the necessary reforms would be complete without some reference to the period after school. It is obvious to those who have considered the question that our primary schools cannot do more than start pupils on a process which must be continued later on in life. At the present time children are removed from school just as the value of teaching is beginning to be felt, and long before they have realised the full benefits schooling can give. We are spending a large amount of money on laying a solid foundation, but we are not paying enough attention to the superstructure we are rearing on that foundation. The hooligans and corner boys are the products, very largely, of our neglect. But their very existence is the best argument we can bring to bear on continuation education. It is to be hoped that the Scottish Education Bill of 1908 will contain the same clauses as it had last year, and will make continuation education compulsory on certain pupils. Society is realizing that in self-defence it must do something, and many are looking to some compulsory form of continuation schools as a very practicable solution of the problem.

After School.

MORAL INSTRUCTION.

THE enthusiasm for moral instruction, as recommended by the vigorous Moral Instruction League, has so far developed that on all sides the call is heard for helpful manuals which will supply teachers with material and with suggestions for the preparation of lessons. Already the League is able to recommend a selected list of works written for a specific ethical end, and including books by Miss Alice Chesterton, Messrs. Everett, Gould, Hackwood, Quilter, Sheldon, Waldegrave, etc., some of these possessing a very considerable circulation in all classes of schools, private and public. A new series is now projected, based upon the graduated syllabus of moral and ethical instruction of the League, covering the instruction from the infants' stage through all the standards to the Seventh, the infants' books and the manual for Standard V. being reissues. Messrs. Thomas Nelson and Sons will publish this important set of teachers' aids.

Concrete and dramatic methods are preferred by the League, though precept and admonition not infrequently occur in the lessons. But a glance at the works issued for and recommended by the League is sufficient to dispel any fear lest a wordy and dry system should create in children's minds a distaste for moral instruction. The ethical lessons indeed, if realised on the principles here sketched, should prove bright spots in the day's routine. Take, for example, Miss Chesterton's fairy-tale *Garden of Childhood*. The thirty stories all converge on definite ethical points, the moral being as clear as the presentation is interesting.

We have seen Miss Chesterton's book in constant use by Sunday-school teachers, and all praise it; and we have known a comparatively inexperienced factory girl succeed in interesting her class of little ones by repeating (not reading) the quaint and cheery dialogues and scenes of the *Garden*.

The Fifth Standard manual, compiled by Mr. A. J. Waldegrave, is framed on a different plan and written in a graver tone. Here again are thirty lessons on Habits, Works, etc., ten being devoted to the subject of Justice.

A veteran inspector was once heard to observe at a meeting of an Education Committee that very few young teachers were competent to give a lesson on such a subject as Justice. It may be safely said that a young teacher of average capacity, assisted by Mr. Waldegrave's Handbook, would not have much difficulty in interesting a class in this and other ethical themes. When the remaining volumes of the series are published, teachers will be provided with a very valuable body of material. A further one, *The Magic Garden*, is appearing at this moment, also from the pen of Miss Alice Chesterton. This is based on Standard III. of the League's Syllabus. It will, we believe, be found no less charming for the little ones than her *Garden of Childhood*. Both these books are beautifully illustrated, and can be used as reading books.

Miss Chesterton is at present engaged on a similar volume for Standards I. and II. Mr. Waldegrave, whose book on Standard V. we have referred to, is preparing the volume on Standard VII., which will contain a citizenship course. Messrs. Baldwin and Robson and Mr. J. H. Wicksteed are engaged on the books for Standards IV. and VII., which will complete the series. The books for Standard IV. and upwards are prepared more with the view to their utilisation by the teachers than as class reading books.

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millions, and though our schools are not inaptly designated "our first line of defence," on them we grudge a few thousands. We are penny wise and pound foolish. Education is not a dull, mechanical process—it must take cognisance of living, active intelligence—yet in how many cases are teachers, *nolentes volentes*, obliged to adopt mechanical agencies in place of methods well known to be more in direct accordance with the true spirit of education. The teacher, if he is to get the best out of his pupils, must be permitted to exercise on each individual child that strong personal influence which is so indispensable to the complete and harmonious development of all his powers.

* * *

The overburdened Curriculum.

ONE other reform I must refer to. The man in the street is complaining that the pupils attending our primary schools are receiving a little of everything, a mere smattering of subjects. Since the school is not intended to promote the material advancement of the pupils, but to develop intelligence and to make the best use of the school years available, much may be said for an extensive rather than intensive curriculum. Those, again, who favour the *multum non multa* in our curriculum say that our education would be all the better if the number of subjects to be taught were fewer. Variety can be carried too far. The number of hours available has not been increased during recent years, yet the number of subjects to be taught have been largely augmented. It is maintained by these that as good an education can be got out of one subject as out of five. My leanings are towards a more intensive curriculum. What I should like to see is the abolition of the hard-and-fast curriculum laid down in the Code. The freedom we as teachers were supposed to have obtained by the introduction of the New Code is not yet great enough. If certain subjects must be compulsory, all should not be, and no grants should be allowed to certain subjects in preference to others. On one point, however, I have no hesitation in saying there is no need for fads in our primary schools. This question of curriculum is one that will have to be seriously tackled in the very near future.

* * *

After School.

NO survey of the necessary reforms would be complete without some reference to the period after school. It is obvious to those who have considered the question that our primary schools cannot do more than start pupils on a process which must be continued later on in life. At the present time children are removed from school just as the value of teaching is beginning to be felt, and long before they have realised the full benefits schooling can give. We are spending a large amount of money on laying a solid foundation, but we are not paying enough attention to the superstructure we are rearing on that foundation. The hooligans and corner boys are the products, very largely, of our neglect. But their very existence is the best argument we can bring to bear on continuation education. It is to be hoped that the Scottish Education Bill of 1908 will contain the same clauses as it had last year, and will make continuation education compulsory on certain pupils. Society is realizing that in self-defence it must do something, and many are looking to some compulsory form of continuation schools as a very practicable solution of the problem.

MORAL INSTRUCTION.

THE enthusiasm for moral instruction, as recommended by the vigorous Moral Instruction League, has so far developed that on all sides the call is heard for helpful manuals which will supply teachers with material and with suggestions for the preparation of lessons. Already the League is able to recommend a selected list of works written for a specific ethical end, and including books by Miss Alice Chesterton, Messrs. Everett, Gould, Hackwood, Quilter, Sheldon, Waldegrave, etc., some of these possessing a very considerable circulation in all classes of schools, private and public. A new series is now projected, based upon the graduated syllabus of moral and ethical instruction of the League, covering the instruction from the infants' stage through all the standards to the Seventh, the infants' books and the manual for Standard V. being reissues. Messrs. Thomas Nelson and Sons will publish this important set of teachers' aids.

Concrete and dramatic methods are preferred by the League, though precept and admonition not infrequently occur in the lessons. But a glance at the works issued for and recommended by the League is sufficient to dispel any fear lest a wordy and dry system should create in children's minds a distaste for moral instruction. The ethical lessons indeed, if realised on the principles here sketched, should prove bright spots in the day's routine. Take, for example, Miss Chesterton's fairy-tale *Garden of Childhood*. The thirty stories all converge on definite ethical points, the moral being as clear as the presentation is interesting.

We have seen Miss Chesterton's book in constant use by Sunday-school teachers, and all praise it; and we have known a comparatively inexperienced factory girl succeed in interesting her class of little ones by repeating (not reading) the quaint and cheery dialogues and scenes of the *Garden*.

The Fifth Standard manual, compiled by Mr. A. J. Waldegrave, is framed on a different plan and written in a graver tone. Here again are thirty lessons on Habits, Works, etc., ten being devoted to the subject of Justice.

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therefore include at every stage all the sounds in the language. What can be the use of hoodwinking children with statements only partially true, which have, moreover, so soon to be unlearned? The English language is exceedingly tiresome to a logical mind of ordinary size, though the man with an extra-sized bump of logic delights in grouping words under countless laws and by-laws; but these very tiresome little words have a piquant interest of their own to a child, who is not in the least worried to find that "g o" says "go" and "d o" says "do."

Then, again, an undue straining of the "sound-name" system always means laborious attempts, long after the need ceases, at sounding the vowels alone. Now vowels are notoriously difficult to pronounce alone, and how often will it be necessary to do so in after years? Why should sounds, which are so obviously meant to sound in chorus, be made to laboriously sing solos? By far the simplest and most effective plan in the long run is to learn both shape and name at once, boldly facing the fact that A is "ā" (though we may slur this particular vowel in common speech when alone), that "an" is "an," and that "ane" is "ane." By all means teach the various sounds of a vowel as they occur; but after all it is its neighbour which will give us the clue, and the sooner they are united the better. Here, again, we trace a wise law that fits most letters and most "humans." Let them enjoy their own name, express their own individuality, realise their own function, and then, having done this, marry them up quickly, for it is not good that they should be alone.

(To be continued.)

A TALE FOR THE STORY HOUR.

THE STORY OF CROAK THE FROG, CHISEL-TOOTH THE BEAVER, AND STRONG CLAWS THE WOLVERINE.

BY E. A. R. NESBIT.

As Croak the Frog was taking his evening hop along the river-bank, he chanced to hear Strong Claws the Wolverine tell his wife how he had found out that the beavers were felling willow-trees to make a new dam, and that he meant to catch one for supper that night.

"I'll lie in wait among the willows in a shady place, and to-night, when the beavers come to cut them down, I shall be sure to catch one." And the Wolverine showed his great teeth in a fierce grin.

"That's a pity," thought Croak. "Such elegant swimmers as the beavers are, too, nearly as clever in the water as myself, and fond of it. I'm sorry, especially as it is not to be expected that the poor beavers will see such a dark-coated creature as Wolverine, if he does keep in the shadow. Can anything be done, I wonder!"

Croak squatted down under a clump of flowers and tried to answer his own question.

After a few minutes he jumped up briskly, went hop, hop, hop, to the edge of the bank, and dived into the water.

"I'll try to warn them," said he to himself, "if I can but find old Chisel-tooth! He is a wise old fellow, and may take a word of friendly advice in the right way. Perhaps he may be found among the water-lily's roots. They are his favourite food, I know."

Good-natured little Croak swam in and out among the long, rope-like roots of the water-lilies. Several beavers were there, feasting merrily, but wise old Chisel-tooth was nowhere to be seen.

"What a pity!" sighed Croak. "The night is coming on, and when it is dark they begin felling the willows, and that savage old Strong Claws will catch one and eat him for supper. How horrible!"

Croak popped his head out of the water, towards the willows, to make sure no work was begun.

"It's all right yet," said he, "but it's nearly dark." Then he resolved on a bold deed. "I'll call on Chisel-tooth in his home—lodge, as it is called—that I will."

Croak dropped down in the water and swam to the entrance of Chisel-tooth's lodge, which was beneath the water, as a beaver's doorway should be, to protect him from wolverines and other enemies. He swam up the passage, stepped gravely on to the dry floor of the lodge, where Chisel-tooth and his wife and family were still resting; for that cautious old beaver had just remarked, "I don't approve of working till it is really night. When once a beaver begins to gnaw a tree, his mind should be given to his work, not taken up by watching for the tiresome creatures who like daylight." He was about to give more good advice to his children, when he caught sight of Croak.

"Taken refuge with me, Croak?" asked he kindly: "You look upset. What's wrong?"

"The wrong is that the Wolverine savage, old Strong Claws, means to go beaver-hunting to-night. I heard him say so, and came to warn you."

At these terrible words all the beavers trembled, and the baby beavers began to whine; for one of the first lessons a baby beaver learns is to beware of the shaggy, dark-coated wolverine, with his sharp teeth and great claws, who goes beaver-hunting in the dark. Old Chisel-tooth banged his flat, scaly tail on the lodge floor till everybody was quiet, and then asked Croak,—

"Do you know where he means to go hunting?"

"Yes," replied Croak. "He is going to be in wait by the willow-trees that you are cutting down for the new dam."

Up jumped Chisel-tooth, and in an instant dived down the water entrance and into the stream. He hurriedly called a meeting of beavers, told them the bad news, and it was decided not to go to the willows that night.

"But," said a young beaver, "what are we to do for trees, for the dam must be built, or the water won't be deep enough in winter for us to swim about under the ice?"

"We must gnaw down the poplar and birch trees on the other side of the river," said Chisel-tooth. "They are not so near the water, so we shall have more work. Luckily, I for one have strong teeth." And he proudly showed the great cutting front teeth, covered with the orange enamel which is much admired in beaver society.

"Oh yes," said his friends, "you were always noted for your strong, sharp, handsome teeth, Chisel-tooth. It's decided, then—we will use the poplars and birch, and hope Strong Claws will not cross the river."

"I'll watch and tell you if he does," said Croak.

The beavers all thanked the kind little frog, and it was agreed that Croak might always take refuge in their lodges if the Pike made himself disagreeable to him. Pikes eat frogs, but the beaver would not hurt Croak's feelings by using the word "eat."

Chisel-tooth went back to his wife.

"It's all settled, dear. Don't you worry. We are going to work on the other side of the stream."

But Beaver Mother wept on.

"You seem to forget that the frost is gone, and our lodge walls are no longer frozen hard, so now Strong Claws can tear a hole in the side or roof, and then what will become of the little ones?" And she wept again, and the little ones cried in terror.

This troubled Chisel-tooth, for he knew the danger was great.

"If Croak will watch," said he at last, "there will be time to escape into the river and hide in our burrow in the banks. I'll ask little Croak to warn us."

The kind little frog said he would do his best, and did watch many nights, and no Wolverine came; but one evening a big fish chased poor Croak away, and that very night Strong Claws stole to the lodge and began tearing off the roof. Chisel-tooth was at work gnawing down the poplars, and only Beaver Mother and the little ones were at home.

Great was their terror at the dreadful scratching and tearing sounds made by Strong Claws.

"Oh," cried Beaver Mother, "it sounds like somebody trying to tear the lodge down."

"It's the Wolverine, perhaps," cried the baby beavers, and they huddled up to their mother.

"Now be brave, my children," cried she. "Go down into the stream, and I'll lead you to the nearest burrow."

This the poor little ones did, all trembling. Then Beaver Mother showed the way to their burrow in the bank; and they huddled all together, and were safe before Wolverine had made a hole big enough to enter the lodge. He found it empty, and went home cross and hungry.

When Chisel-tooth came home he was much upset, for he feared his children were killed, and rushed back to the stream to try to get news. At the door he met Croak.

"They are quite safe in the burrow," said Croak gaily. "Beaver Mother has sent me with the news."

Then Beaver Father called them from the burrow, and took them to feast on the water-lily roots.

"Don't you eat all the roots," said Croak. "I like sitting on the broad leaves, you know."

And the beavers promised to leave the roots and stems of the *broadest* leaves, because he was such a good fellow.

THE STORY OF THE RIVER.

A SCHEME OF CONNECTED LESSONS FOR STANDARD I.

BY E. MONA CLAY AND R. M. M. ATKINSON, INSPECTORS OF SCHOOLS, MANCHESTER EDUCATION COMMITTEE.

ALL nature is awaking with the spring, not only plant life, but animal life as well. Dormant nature has had its time, and must give place to activity. This idea is pictured out in the lessons for the month. Some of our winter sleepers—the hedgehog and the snail, for instance—illustrate the return to power after long quiescence. The life-history of the frog, with its marvellous stages of development, appeals to children in a special way. It fascinates and attracts and arouses the wonder element in child-nature just in the same way as the story of the metamorphosis of the butterfly has always something of fairyland about it, and enthrals the child mind with nature's wonder-working ways.

I.—SKETCH OF A LESSON ON THE HEDGEHOG.

Preparation.

A few simple questions about the animals likely to be found on the land adjacent to the river (the mole, water-rat, rabbit, etc.), their characteristics, and any other points which will lead up to the subject of the lesson.

Presentation.

I. Description.—(*a*) Gain from the children their ideas of the general *build* of the hedgehog's body. (*b*) The *nose* or *snout* is long and pointed. Can the children tell its use? Refer to the shape of the pig's snout, and show the origin of the name hedgehog. (*c*) Let the children note that the *eyes* and *ears* are small in proportion to the rest of the body. Compare and contrast with those of the mole. (*d*) The *legs* are short and stout; the *paws* are broad, and terminate in sharp claws. (*e*) Call the children's attention to the very small *tail*.

II. Food.—The food of the hedgehog is extremely varied. It eats insects, worms and snails, mice, birds' eggs, fruits and roots. It is often kept as a domestic pet to rid houses of beetles, cockroaches, etc.

III. Characteristics.—(*a*) Point out that although the hedgehog cannot run very quickly, its prickly spines form the means of defence when attacked by such animals as cats, dogs, and foxes. Show how it curls itself up into a ball of sharp spikes, which very few animals care to approach. (*b*) Tell of its habit of hiding during the daytime, and coming out to hunt for its food after sunset. (*c*) Describe the hedgehog's nest of grass, moss, and leaves, which is covered with a kind of roof to keep out the rain. (*d*) Mention that the hedgehog lays up no store of food for the winter, but simply lies torpid, curled up in a ball, till the approach of spring.

Association.

Associate with the mole.

Formulation.

A brief description of the hedgehog given by the children.

Application.

See occupations.

EXPLANATION OF ILLUSTRATIONS.

Teacher's Illustration.—This animal may be represented in some suitable surroundings; the suggestion here given is a country lane.

TEACHER'S ILLUSTRATION.

Painting.—For this follow the teacher's illustration. Use brown paint for the animal and a touch of green for grass, or do the whole thing in sepia on white paper. Do not outline the hedgehog—this will spoil the effect. Draw the head with the brush; the rest must be done entirely by fine strokes. A touch of dark colour underneath will throw the drawing well into relief.

Modelling.—This animal may also be modelled. About a quarter-pound of clay is necessary for each child. The general shape may be easily obtained by forming an oval from the sphere. Make the snout by working up towards a point. The eye may be shown by making a hole with a sharp instrument, and the spines by roughening the body, either by working up little pieces of clay from the body, making them cross and recross one another, or by using fresh pieces of clay rolled into tiny pieces and inserted. The first method works out best, and is more natural and suggestive as to the way in which the spines grow.

II.—SKETCH OF A LESSON ON THE SNAIL.

Required for Lesson.

A few live snails if possible; also snail shells.

Preparation.

Allude to the lesson on the earthworm, and see if the children can tell the name of another creature that may be seen crawling about the ground as soon as spring arrives.

Presentation.

I. Description.—(*a*) Let the children examine the specimens, and find out that the snail's body is soft and without bones. (*b*) A covering of skin, known as the mantle, fastens the body to the shell. This completely envelops the snail when it retires into its shell. Refer to the slit by means of which the creature breathes. (*c*) Call attention to the horns, of which there are two pairs—a long pair, on the ends of which the eyes are fixed, and a short pair, which are used as feelers. Notice how flexible these horns are, and how they can be drawn in, partially or entirely. What advantage is it to have the eyes so placed? (*d*) Describe the mouth plate, and the tongue or ribbon with its file-like teeth. (*e*) Call attention to the fold of muscle known as the foot, and explain how the snail moves about. Compare the foot with a boy's leather sucker.

II. The Snail's Home.—(*a*) Sketch a section of a snail's shell to illustrate its spiral character. Compare with a corkscrew. (*b*) Let the children describe the way the shells are marked. Note the variation in colour and also in shape. (*c*) Tell that the snail makes its shell, and also the cap which forms the door to its house in the winter, from a chalky liquid which exudes from its body.

III. Characteristics.—(*a*) Refer to the slimy substance which is exuded by the snail. Show how it keeps the body moist, and enables the creature to move about. Compare with the earthworm. (*b*) Let the children describe the food of the snail, and the way it files it into minute pieces by means of its specially-constructed mouth. (*c*) Point out that when winter approaches the snail crawls into a hole or beneath some stone, fastens up the mouth of its shell with a layer of hardened slime, and passes the cold months of the year in a state of torpor.

Association.

Let the children enumerate how the snail resembles, and how it differs from, the earthworm. Its shell might be contrasted with those of the cockle and mussel.

Formulation.

The snail is a soft-bodied animal, which carries its shell on its back. It feeds on plants of various kinds, and sleeps through the winter months.

Application.

See occupations.

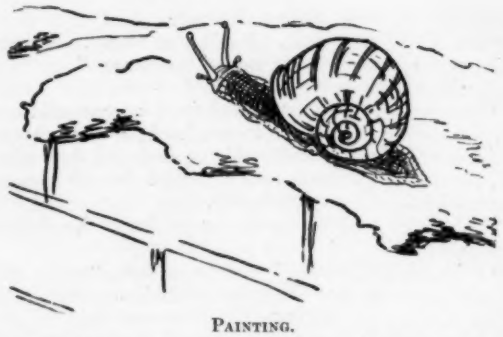
EXPLANATION OF ILLUSTRATIONS.

Teacher's Illustration.—The suggested illustration shows the life-history of the snail:—(1) Snail's eggs; (2) the shell from the egg; (3) the young snail; (4) the full-grown snail.

TEACHER'S ILLUSTRATION.

Painting.—This picture is to represent the snail in one of its native elements—on a moss-covered wall. Paint the wall first—just some lines to represent brickwork; these will be best done in red paint. Use brown for the snail. It should be allowed to dry after having been painted, and then the rings may be represented on the shell by giving another coat of colour. Use some good moss green for the moss on the wall.

Modelling.—To model this, first make a slab of clay—a small one will do—then take about two ounces of clay and roll it into a ball. Flatten one part of it a little, and hollow out the opening, moulding the shape of the shell with the hands. The spiral on the shell may be drawn with a suitable instrument,



PAINTING.

and the clay worked up a little to represent the natural shell. A model of the snail out of its shell as shown in the picture for the painting lesson is very attractive to children, and has its own educational value. Points relating to the horns and the eyes may be emphasised during the execution of the work.

MODELLING.

III.—SKETCH OF A LESSON ON THE TADPOLE.

Required for Lesson.

Frog spawn, tadpoles (if possible showing the various stages of development), and a herring to show a fish's gills.

Preparation.

Question to see if the children remember any of the numerous creatures which pass their existence in the waters of our ponds and streams. When these have been enumerated (probably fish and water-grubs will be given), tell the children of another creature, neither fish nor grub, which passes part of its life in the water.

Presentation.

I. The Eggs.—Show specimens of frog spawn, and let the children note that the little black specks are the eggs of the frog. Each of these when first deposited at the bottom of a pond or stream is enveloped in a sticky substance, which swells and forms a ball of jelly round the egg. Explain that this jelly protects the eggs from being eaten by fish and other creatures, and also causes them to float to the top of the water, where they will be hatched by the heat of the sun.

II. The Tadpole.—(*a*) When hatched, the young frogs, or, as they are called, tadpoles, look very like tiny fish. They cling in bunches to a water-weed, and subsist on the remains of the food with which they were provided in the egg. After a few days the mouth appears, and the tadpole begins to feed on green water-plants, and to swim about, propelling itself by means of its long tail. (*b*) Show a sketch, and describe the breathing organs, which appear as thread-like tufts on each side of the head. These give place to gills similar to those of a fish. Refer to the lesson on a fish, and let the children tell about the gills and their use. (*c*) The tadpole gradually increases in size, hind legs appear at each side of the tail, and a little later the front legs may be seen. Point out that as the legs develop the tail begins to shrink, and finally disappears. Other changes also take place: the gills change into lungs, so that the creature must come to the surface of the water to breathe; the shape of the body alters; the mouth becomes broad, and is found at the front of the head. The young frog now leaves the water, and commences its new life on land.

Association.

Associate with a fish.

Formulation.

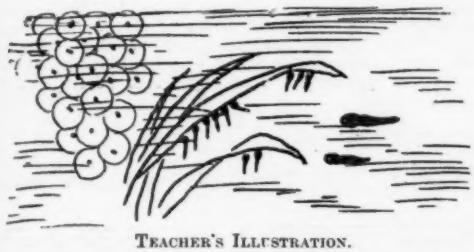
The tadpole in its early life resembles a fish. It has a head and tail, but no fins. It breathes through gills, which give place to lungs when it changes to a frog.

Application.

See occupations.

EXPLANATION OF ILLUSTRATIONS.

Teacher's Illustration.—In some such way as that suggested by the picture, the stages of development in the life of the tadpole may be represented. Drawn in white chalk on the blackboard, an effective picture may be made.



TEACHER'S ILLUSTRATION.

Painting.—To make a really good picture of this three colours would be required—green, blue, brown. Paint the outlines of the pond banks brown, the water and touches for the sky blue, the reeds and water-lilies green, the frog spawn brown. All the paints should be pale colours. Of course the painting may be just sepia. In that case the frog's eggs must be left white, with a dark dot exactly as shown in the illustration.

PAINTING.

Modelling.—All teachers will find this a most entertaining and educative exercise. All the important points brought out during the lesson may be emphasised and made clear to the children. The models need not be made too small, and they will be better if placed on a slab.

MODELLING.

IV.—SKETCH OF A LESSON ON THE FROG.

Required for Lesson.

A live frog, if possible; failing that, suitable sketches.

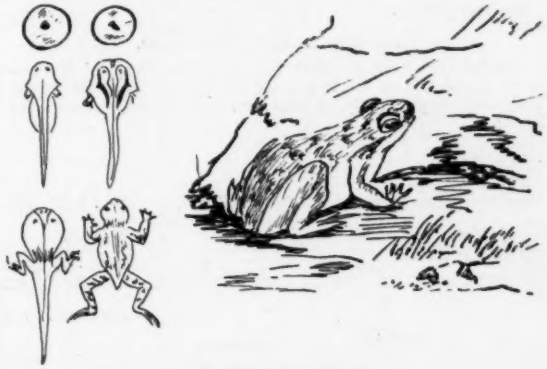
Preparation.

Simple questions on the subject of the tadpole, which will lead up to the lesson on the frog.

Presentation.

I. Description.—(*a*) *Body.* Let the children describe the general build of the frog, noting in what respects its shape differs from that of the tadpole.

(*b*) *Skin.*—The skin is smooth, and varies in colour from brown to greenish-yellow. Patches of darker colour give it a speckled appearance. Refer to the various means which animals have of protecting themselves, and explain how the frog can change its colour to suit its environment. Tell of the slimy fluid which keeps the skin moist, and allude to the slimy secretions of the earthworm and snail.

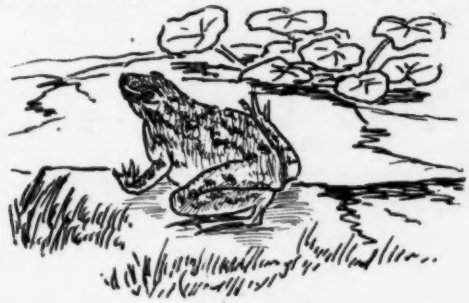


TEACHER'S ILLUSTRATION.

(*c*) *Head and Eyes.*—Note the triangular shape of the head and the large protruding eyes. What advantage is it to the animal to have them so placed?

(*d*) *Mouth.*—Compare the wide mouth and its position with that of the tadpole. Show a sketch of the tongue, which is attached at the front of the mouth and not at the back like ours, and mention the sticky fluid with which it is covered.

(*e*) *Legs.*—Note the difference in size between the fore legs and the large hind legs.



PAINTING.

II. Characteristics.—(*a*) Let the children find out that owing to the construction of the legs the frog does not walk but hops. (Compare with the rabbit.) Observe that the feet are webbed. How does the frog move in water? (*b*) Point out that the frog lives on insects, snails, and worms, and describe how the tongue is specially adapted to capture the former. (*c*) Explain very simply the way the frog pumps air into its lungs by means

MODELLING.

of its mouth and nostrils. Note that it also breathes through its moist skin. (*d*) Frogs cannot breathe if their skins become dry, hence they frequent moist places, ponds, and streams. (*e*) When winter comes they bury themselves in the mud at the bottom of the pond or stream, and lie there torpid till the spring-time.

Association.

Associate with the tadpole.

Formulation.

A frog is a fully-developed tadpole, which has changed in form and in habits to suit a new kind of life.

Application.

See occupations.

EXPLANATION OF ILLUSTRATIONS.

Teacher's Illustration.—Here are given the stages of development in the life of the frog from the egg to the perfect frog. They may very suitably be drawn on the blackboard before the lesson.

Painting.—The colours most suitable for this are green and brown. Paint the grass and leaves green, and the frog brown, with darker-brown spots. If there is difficulty as to time and the children are unable to manage the whole picture, it may easily be shortened by omitting the leaves and background.

Modelling.—This is not really so difficult as it appears. Get the general shape by moulding from the oval. The legs may be made by rolling cylindrical pieces of clay a considerable length, and then bending into shape and attaching. The eyes protrude very much, and the mouth may be made simply by a slit. About a quarter-pound of clay would be required for each child.

Words by GABRIEL SETOUN. *By permission.*

GOD'S WORK.

Music by SEYMOUR BENSON.

Smoothly, and not too fast.
Solo.
Cows in the mead-ow, and birds in the tree; Hors-es on high-ways, and fish in the sea;
mf Ped. Ped. p
Ped. Ped. simili.
rall. a tempo.
Sail-ors in schoon-ers, and min-ers in mines; Deep down in pits where the sun nev-er shines; Girls play-ing jing-go-ring, boys sound-ing tops;
p p
Ped. Ped. Ped.
rall.
Moth-ers in kitch-ens, and fa-thers in shops; The sun in the heav-ens from morn-ing to night, Mak-ing the fields and flow'rs laugh in his light;—
cres. mf dolce.
Ped.
tempo. rall. Repeat in Chorus from
Watch-ing o'er ev-ery-thing all the day through, Oh what a lot of work God has to do!
p mf p mf
rall. a tempo.
Ped. Ped. Ped.

A YEAR'S WORK FOR SECOND CLASS INFANTS.

BY G. DAGGER, PONTYMISTER.

FIRST QUARTER.

No.	Nature of Lesson.	Story.	Song and Game.	Clay Modelling.	Freearm Drawing.	Freehand Drawing.	Crayon Work.
1.	Cat.	"Purring when you are pleased." *Parables from Nature.* Mrs. Gatty.	"Cat and Mouse." *Finger Plays.* Emilie Poulson. (Curwen & Sons.)	Saucer for Milk.	Perpendicular lines.	Jug.	Cat on Mat.
2.	Mouse.	"Three blind Mice."	"Miss Mousie." *Songs and Games.* Eleanor Smith.	Cheese.	Horizontal lines.	Mouse Trap.	Wheat and Mouse.
3.	Milk.	"What the Milk told Me." In the *Child World.* Emilie Poulson. (G. Philip & Son.)	"Thank you, pretty Cow." *Songs and Games.* E. Smith.	Pat of Butter.	Milk Can.	Stool.	Cow.
4.	Bread.	"Nero at the Bakery." In the *Child World.* Emilie Poulson.	"Making Bread." *Finger Plays.*	Loaf of Bread.	Bread Tin.	Peel.	Loaf and Baker.
5.	Apple.	"Story of an Apple." Jeannie Mackenzie's *Nature Programme.* (Charles & Dible.)	"Autumn." *Song Game Book.* Keatley Moore.	Cutting Leaves in Clay.	Slanting lines.	Ladder.	Apple and Leaf.
6.	Dog.	"A Clever Sheep-dog." In the *Child World.* Emilie Poulson.	"The clever Dog." *Nature Programme.*	Collar and Chain for Dog.	Kennel.	Tin for Food.	Dog.
7.	Carrots and Turnips.	"Jack Frost and his Work." *Nature Programme.*	"Autumn Winds are crying." *Songs and Games.* E. Smith. (Curwen.)	Carrot.	Turnip.	Beet.	Carrot and Leaves.
8.	School Bell.	"Curfew Bell." Any simple History Reader.	"The Bell Song." *Songs and Games.* E. Smith. (Curwen.)	School Bell.	Clapper of Bell.	Bell in Tower.	Bell in the School Tower.
9.	Book.	"How Books are made." Jeannie Mackenzie's *Environment Programme.* (Charles & Dible.)	"This is the Way we make a Book." Air — "Around the Mulberry Bush."	Book.	Open Book.	Front Cover of Book.	Design on Cover of Book.
10.	Boots and Shoes.	"Seeing Shoes made." *Environment Programme.*	"The Shoemaker." *Songs for Little Children.*	Hammer.	Sole of Boot.	Slipper.	Pair of Brown Boots.
11.	Gloves.	"Story of Richard II." *Environment Programme.*	"Sewing Song." *Songs and Games.*	Baby's Glove.	Glove.	Glove.	Coloured Glove.
12.	Cow.	"Cow who lost her Tail." In the *Child World.*	"Thank you, pretty Cow." *Songs and Games.*	Milking Pail.	Gate.	Drinking Trough.	Cow.
13.	Sheep and Wool.	"How a little Boy got a new Shirt." In the *Child World.*	"Little Bo-peep."	Sheep's Horn.	Turnips and Carrots.	Sheep Pen.	Molly and her Lamb.
14.	Nuts.	"A Day in the Woods." *Nature Programme.*	"Here we come gathering Nuts and May." Air—"All around the Mulberry Bush."	Acorn and Cup.	Hazel Leaf.	Basket.	Bunch of Hazel Nuts.
15.	Rabbit.	"The thrifty Squirrels." In the *Child World.*	"Rabbit and Tortoise." Words in *Nature Programme.* Air — "The Campbells are coming."	Cabbage.	Hutch.	Lettuce Leaf (oblong).	Rabbit.

EDUCATION IN PARLIAMENT.

THE Education Bill, the Devolution Bill, and the Half Time Bill—that is the programme so far. A whole Friday afternoon—five solid hours of desultory argument—was spent on the Devolution or Decentralisation Bill, which would set up School Boards or District Education Committees within the different areas of the counties. The friends of the Half Time Bill, particularly Mr. Rea, who introduced it, and Mr. Yoxall, who backed it, sat waiting in vain for its chance. It stood "second order" to the other, and there was just a hope that if the other were done with on Second Reading about four o'clock on that Friday, the Half Time Bill might get an innings and be pushed forward a step. But that hope was not realised. With the customary perverseness of Parliamentary matters the first Bill, unpractical and yet pretentious, kept dawdling on. Yet it had a rare chance of early and blessed extinguishment. Mr. Walker, who introduced it, broke down through nervousness after he had said a few sentences, and thereupon "retired hurt," as they say in the cricket reports. But his Bill persisted, was seconded, and went on and on. The Half Time Bill, brief, practical, and immensely useful, got no chance that day, and must seek for a chance night after night, when the clock has struck eleven and the Government division is over, at a period when any single member may stop it from proceeding by simply rising and uttering, "I object." Such is Parliamentary procedure at its worst.

As to the Education Bill, one can best hope to understand it by a search after motives. No need to catalogue its clauses here, show how the Bill would work, what good and what evil it would cause, and so forth; the daily and weekly newspapers have done that almost *ad nauseam*, though they have looked at the measure from a non-educational standpoint as a rule. The motives for the Bill and its Parliamentary chances are the really important things to describe here. Political exigencies are the father and mother of this Bill. In one sense—and a large important sense—it is a Passive Resisters' Relief Bill; it is a Bill which, if passed into law, would give an ostensible reason for the Passive Resistance Movement coming to an end. It is also to some extent a Vengeance Bill; it would visit the sins of the House of Lords two years ago upon the "contracted-out" children of the present and the next generation. It is a fair sheet fatally blotted, the great smear of "contracting-out" lying all across those of its provisions which are excellent and beneficent, and thus nullifying, and indeed worse than nullifying, the whole.

No Government Bill at its First Reading during recent years was more coolly received by Government supporters than was this. Enthusiasm for it is impossible. Had Mr. M'Kenna omitted the "contracting-out clauses," enthusiasm in rare measure would have been forthcoming from the benches behind him. The one straight and wholesome policy for a Minister of Education to pursue is a policy which affirms public principle and educational efficiency combined. If Mr. M'Kenna had risen and said, "All schools receiving public money are to be under complete local management by appointed or elected representatives of the public, are to be unsectarian but not irreligious, and are to receive a larger Government grant," he would have won staunch support and great applause. Such a Bill as that might not have passed into law, but—is it at all certain that his actual Bill will pass into law? Such a Bill as that might not have passed into law the first time, but it would have affirmed a policy, asserted a principle, and set up a landmark to be afterwards reached. But Mr. M'Kenna has chosen to bring forward a Bill which can only be defended on grounds of political and even party expediency, and he will receive his fitting reward.

Logically, there is of course no difference between paying rates towards schools and paying taxes out of which grants are made to the same schools. But the Passive Resisters have in practice discovered such a difference, and, they having discovered and denounced it, the practical man will not stop to argue with them about the fallacy they espouse. That is the political expediency and party difficulty which Mr. M'Kenna has had to meet. Mr. Balfour's Education Bill and Act of 1902 did, no doubt, affront two great principles: it negatived the principle that public money should be administered by representatives of the public only; and it *did* "place Rome on the rates," and Canterbury also. But all the same, it accomplished a great work for educational efficiency and progress. It did political and theological wrongs in order to do educational rights. Naturally, Mr. Balfour minimises the former features of it and lays stress on the latter. That is why he so jealously watches and contrives that his Act shall not be annulled or reversed.

But Mr. M'Kenna's Bill, in order to do political and theological justice, does education a grave wrong. That is the difference. The man who puts constitutional principle and religious liberty first and foremost will applaud Mr. M'Kenna's Bill; the man who thinks that the progress of education among the masses is more important than stickling for civil and religious equality in school practice will condemn Mr. M'Kenna's Bill. In point of fact, the average Liberal and Labour man is torn between two opinions: he sees that from the point of view of constitutional principle Mr. M'Kenna's Bill is right, and that from the point of view of educational efficiency it is wrong.

So purblind do party expediency and sectarian feeling make people that the real considerations in this matter—the real considerations are the educational considerations, of course—go unperceived at Westminster for the present, and even the by-products of "contracting-out" are not yet recognised in their odious inconsistency. The Passive Resister will be freed from his conscientious compulsion to be sold up or to go to prison by a clause which will put myriads of children vastly more under the thumb and influence of the priests or parsons, whom the Nonconformists protest against, than they are at present. That is the way in which undenominationalism will be vindicated, according to Mr. M'Kenna's Bill. In order that Dr. Clifford (shall we say?) may not pay rates towards the maintenance of London non-provided schools, he is going to pay more taxes towards grants for London contracted-out schools. In order that young Hodge may not attend a partly Church of England school in the vil-

lage, young Bill and young Jenny are to go to a wholly Church of England school in the town.

* * *

What are the Parliamentary prospects of the Bill? At the time of writing the prospects are that the Bill will pass. One thinks of the infamous "Holy Alliance" when one sees that an unholy alliance between Roman Catholics, Anglicans, and Nonconformists is likely to come about on the basis of "contracting-out." If the Archbishop of Canterbury and Archbishop Bourne can get the Government to make the "contracted-out" schools' grant 48s. or 49s. per child instead of 47s., and if the Tariff Reform section of the official Opposition can persuade Mr. Balfour to accept that and so clear the education question out of the way awhile, then the Bill may pass both the House of Commons and the House of Lords. And teachers and other true friends of education will have to work terribly hard if they are to prevent that. Now, at last, one would think, the teachers in the public elementary schools of the country as a whole will realise how unsafe is their position, how much they are at the mercy of political coalitions, on a subject of such intense public dispute as the schools in which they are employed.

THE ENGLISH ASSOCIATION.

ONE significant proof of the interest now being aroused in all that bears on education is the formation of numerous societies for emphasising the importance of each subject in the curriculum. Nature study, manual training, physical exercises, science, drawing, music, all have their own societies, pledged to further the special aims and value of the respective subjects indicated.

There is much that is hopeful in all this. It secures concentrated attention on every side of the school work, it gives scope for the skill of the specialist, and it secures that no subject shall be underrated in importance or neglected in practice.

The one danger lies in the possibility of elevating individual subjects beyond their legitimate place in the whole curriculum, and of expecting from them more than they can individually give us in the way of all-round educational effect.

There is one "subject," however (to use an erroneous term), from which, we venture to think, no such dangers need be feared. We speak of the "teaching of English," by which the child approaches practically all other "subjects," and which, if rightly developed, is one potent factor in strengthening character and broadening one's outlook on life.

At every stage the teaching of English may be made profoundly interesting, from the earliest study of the words themselves to the later stages, when the vast fields of knowledge and thought of the ages stretch out before one.

A full grasp of language means a fuller intercourse with one's fellow-men, an instrument for strengthening and broadening the mind, and a world of delights when other resources fail.

All this seems the veriest truism, yet how sadly the mother-tongue has been neglected in our schools, until we can even find scholars of other lands who know and love our language better than we do ourselves.

Many circumstances have conspired to bring about this state of things, especially amongst the children of our elementary schools. Large classes and mechanical "discipline" render free speech impossible; a narrow, material environment limits at once the world of things and the world of words. In the older systems of training teachers the text-book prevailed to such an extent that we recall a college student who, after a long term of lectures and "cram," gave her vacation to Lytton and Dickens, and who, being found on her return stealthily finishing *David Copperfield* in a vestibule, was promptly "carpeted" before the principal!

We have changed all this. "English" is coming into her own, with, of course, the creation of the inevitable "Association." Curiously and significantly, *after* the Classical and Modern Language Associations, and even the Esperanto Society, there comes into being the English Association, which, barely a year old, now numbers nearly 1,000 members. Unlike most kindred societies, which can perforce appeal only to people of certain professions or interests, the English Association has a claim on every citizen, since the mother-tongue is the heritage of all; and thus we find represented on its committee and on its list of vice-presidents many names of those renowned as English writers outside the teaching profession. The English Association, in fact, is a creation of national importance, even though, from the ideal point of view, we should prefer that its existence were unnecessary. To elementary teachers especially, who have the moulding of the larger number of future citizens, the Association should specially appeal, and we hope that many will respond to the call. The Association publishes quarterly bulletins giving the record of its proceedings and other information, also occasional leaflets, of which we may mention two promised in the near future, one on *Books of General Method in the Teaching of English*—a useful bibliography—and the other *A Shakespeare Reference Library for Teachers*, edited by Mr. Sidney Lee.

The President for 1908 is the Right Hon. A. H. D. Acland, and the General Secretary is Professor Boas of the London County Council Education Department; whilst information and forms of application for membership can be obtained from the Assistant Secretary, Miss Elizabeth Lee, 8 Mornington Avenue Mansions, West Kensington, S.W. The yearly subscription is 5s.

REALITY IN TEACHING.

I WISH I had once more command of a class of intelligent boys and girls in their last year of school life, and almost ready to enter that workaday world for which our school curriculum prepares them somewhat indifferently. For then I would use my monthly copy of Mr. Heinemann's useful monthly magazine, *The World's Work*, in the preparation of a series of living lessons on some of the many-sided activities of modern life. For example, the March number, which now lies before me, would provide excellent material for a lesson on (1) flying machines, (2) English as the world language, (3) the butter industry in Victoria, (4) rules of health, (5) the shoddy industry, and (6) Kilkenny wood-workers—a varied assortment indeed, and all the information of the most up-to-date and interesting character. What a welcome relief such lessons would be to those of the ordinary time-table! See how such subjects as the above would galvanise with life the ordinary science, grammar, geography, hygiene, and commercial lessons respectively! Here is a teacher's aid of the best possible character.

Our Query Column.

RULES.

1. Each correspondent is restricted to *one* question.
2. Each query must be accompanied by the name and address of the correspondent, and the *coupon* which appears on the back wrapper of the current number of the Journal.
3. CORRESPONDENTS MUST IN ALL CASES STATE THE SOURCE FROM WHICH THEIR QUERY HAS BEEN OBTAINED.

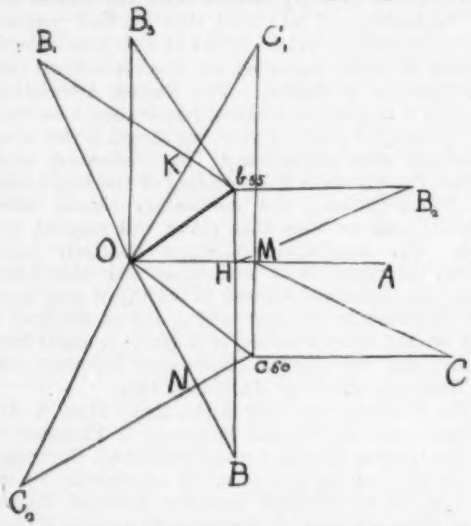
The editor reserves to himself the right to decline to answer any question which is, in his judgment, unsuited to the Magazine.

Pneumatics.—OA, OB, OC are three pieces of wire soldered together at O. You are given the plan when AOB rests on the ground, with OC inclined upwards, the height of C being indexed in millimetres.

(*a*) Draw an elevation on a vertical plane so chosen as to exhibit an edge view of the plane containing AOC. What is the inclination of this plane to the horizontal?

(*b*) Draw the index plan of the projection of OB on the plane AOC, and determine the angle which OB makes with this plane.

(Practical Plane and Solid Geometry, Stage 3, 1906.)



(*a*) Draw *c*M perpendicular to OA, and *c*C perpendicular to M*c*. Take *c*C equal to 60 millimetres, and join MC. Then M*c*C is the required elevation, and the angle *c*MC measures the inclination of the plane AOC to the horizontal.

(*b*) Produce *c*M to C_1, making MC_1 equal to MC. Join OC_1. Then the angle AOC_1 is the true magnitude of the angle AOC. Draw *c*N perpendicular to OB. With O as centre and OC_1 as radius draw a circle cutting *c*N in C_2. Then the angle BOC_2 is the true magnitude of the angle BOC. Make the angle C_2OB_1 equal to the angle C_2OB, taking OB_1 equal to OB. From B, B_1 draw perpendiculars BH, B_1K to OA, OC_1, and let *b* be the intersection of the perpendiculars. Then *b* is the plan of the projection of the point B upon the plane AOC. Draw bB_2 perpendicular to *b*H. With H as centre and HB as radius describe a circle, cutting bB_2 in B_2. Then B_2b is the length of the perpendicular from B upon the plane AOC. Writing its value (55 millimetres) after *b*, we have the index plan of the projection of OB on the plane AOC. Draw bB_3 perpendicular to O*b*, making bB_3 equal to bB_2, and join OB_3. Then the angle bOB_3 measures the angle which OB makes with the plane AOC.

F. B.—A besieged fortress is held by 5,700 men, who have provisions for 66 days. If the garrison loses 20 men each day, for how many days can the provisions hold out?

(London Matriculation, January 1908.)

Calling the portion of provisions consumed by each man per day a "ration," there are 5700 × 66 rations to begin with. Now the number of rations required day by day will be 5,700, 5,680, 5,660, and so on. Suppose n to represent the number of days the provisions will hold out. Then we have

$$(5700 + 5680 + 5660 + \text{etc., to } n \text{ terms}) = 5700 \times 66. \quad . \quad (1)$$

Now the sum of n terms of the series on the left-hand side of (1) is

$$\frac{n}{2}\{2 \times 5700 + (n-1)(-20)\}.$$

$$\therefore\ n(5700 - 10n + 10) = 5700 \times 66.$$

$$\therefore\ n^2 - 571n + 37620 = 0.$$

$$\therefore\ (n - 76)(n - 495) = 0.$$

Hence $n = 76$, or 495.

But the last term in the series on the left-hand side of (1) must be greater than zero.

$\therefore$ 5700 + $(n - 1)(-20)$ must be greater than zero.

Hence $20(n - 1)$ must be less than 5700.

$\therefore$ n must be less than 286.

The value $n = 495$ must therefore be rejected. Hence the provisions will last for 76 days.

Grateful.—From the theorems of Pappus deduce the volume and surface of a frustum of a right cone. (Minchin's *Statics.*)

Let ABCD be the right-hand half of the vertical section of the frustum through the axis AD. Denote AB by R, DC by r, and AD by h. Draw CE perpendicular to AB, and let F be the middle point of BC.

The area of AECD $= r \cdot h$.

The area of EBC $= \frac{R - r}{2} \cdot h$.

Distance from AD of centre of area of AECD $= \frac{AE}{2} = \frac{r}{2}$.

Distance from AD of centre of area of EBC

$$= AE + \frac{EB}{3} = \frac{R + 2r}{3}.$$

By one of the theorems of Pappus the volume generated by the revolution of ABCD about AD as axis is equal to

$$2\pi\left(r \cdot h \cdot \frac{r}{2} + \frac{R - r}{2} \cdot h \cdot \frac{R + 2r}{3}\right)$$

$$= 2\pi\left(\frac{r^2}{2} + \frac{R - r}{2} \cdot \frac{R + 2r}{3}\right)h$$

$$= \pi\left(r^2 + \frac{R^2 + Rr - 2r^2}{3}\right)h$$

$$= \pi(R^2 + Rr + r^2)\frac{h}{3}.$$

Again, the distance from AD of F, the middle point of BC, is equal to

$$AE + \frac{EB}{2} = r + \frac{R - r}{2} = \frac{R + r}{2}.$$

By one of the theorems of Pappus the surface generated by BC, as ABCD revolves about AD as axis, is equal to

$$BC \times \frac{R + r}{2} \cdot 2\pi. \quad \text{But } BC = \sqrt{\{(R - r)^2 + h^2\}}.$$

Hence the curved surface of the frustum is equal to

$$\pi\sqrt{\{(R - r)^2 + h^2\}}\,(R + r).$$

A RECENT issue of *T.P.'s Weekly* sees the inauguration of several new features, amongst them a series of articles under the title "Travel the Teacher." Mr. J. H. Yoxall inaugurates the series with an introductory article. Other new features are a series of "Nature Notes" and a "Home Reading" in *Richard II.* similar to that in *Macbeth*, which proved such a success last year, and will be given from week to week.

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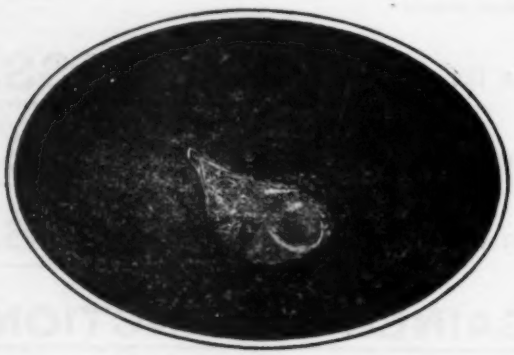
The Editor's Bookshelf.

FOR NATURE LOVERS.

MESSRS. CASSELL have issued a school edition of Mr. Richard Kearton's charming book, *The Fairy Land of Living Things*, which we heartily commend to all our readers who are interested in Nature Study, and who wish to find a volume simply written, without any terrifying phraseology, and fully illustrated. We have ourselves tried the book on a very young but very keen Nature student, whose delight was unbounded. We give above, by the courtesy of the publishers, one of the reproductions from Mr. Cherry Kearton's excellent photographs, of which there are no less than one hundred and fifty in a book of 182 pages. The letterpress is simply written, and deals with (1) The Romance of Bird Life, (2) British Mammals, (3) British Snakes, Lizards, and Amphibians, (4) Wonders of Plant Life, and (5) Wonders of the Insect World.



THE COMMON DOTTEREL ON NEST.

From the same publishers comes also the first part of *British Birds' Nests*, also by Messrs. Richard and Cherry Kearton, who might fitly be called the Brothers Cheeryble of the Nature world. This issue is to be in sixteen fortnightly Parts, and the arrangement is alphabetical. This first Part begins with the blackbird, and ends with the chough. The letterpress is terse and sufficient, and the plates excellent in composition and reproduction, as we have been taught to expect. Surely the word goes round the bird world, "Now you must look your best to-day and pose carefully, for Mr. Cherry Kearton is coming with his camera." The photogravure plate of the young buzzard is alone worth the shilling charged for this Part.

MR. HORACE J. WRIGHT, F.R.H.S.

Nature students and amateur gardeners will find much practical help, encouragement, and inspiration in Mr. Edward Owen Greening's well-known hardy annual, *One and All Gardening*, 1908. The editor's opening article, "The Happy Land," is a plea for covering Britain with garden homes for our people. There is an article by F. Herbert Stead, the Warden of the Robert Browning Settlement, on "Town Gardens," and one by Horace J. Wright, F.R.H.S., Acting Inspector of School Gardens to the Surrey County Council, on "Garden Teaching in Schools." The Hon. H. A. Stanhope writes on "Some British Medicine Plants." There are cultural articles by S. Arnott, S. L. Bastin, D. S. Fish, and the late Richard Dean. James Scott has two well-illustrated articles on microscopical subjects. Lina and Ella Oswald contribute plant biography and romance. The work runs to 160 pages, clearly printed on good paper, and illustrated on nearly every page. We have pleasure in presenting our readers with a portrait of Mr. Wright, whose excellent paper ought to be carefully studied by all progressive educationists.

BOOKS TO BE SEEN AT THE HASTINGS CONFERENCE.

MANY of our readers will be visiting the Publishers' Exhibition during the N.U.T. Conference week at Hastings. We have therefore inspected a large number of the school books which the various publishers intend to display, and give below a few notes which we hope will form a kind of guide for the purpose. The number of books is somewhat confusing, and our brief notes may help to fix attention upon a few of the most notable.

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Our Science Section

CHEMISTRY.

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Recent Work on Group IVA.—In view of the special interest attaching to the members of elements constituting Group IVA. from their increasing commercial importance, the following account of recent work in connection with them will be useful.

The production of lamp-black and graphite by the explosive decomposition of acetylene under a pressure of six atmospheres has recently been investigated, and it is pointed out that the carbon resulting from the explosion of a mixture of acetylene and carbon monoxide or dioxide is entirely free from oily matters associated with the carbon obtained from acetylene alone. The carbon so produced is of higher electrical conductivity than ordinary charcoal, and forms a dense black pigment of high covering power. Calcium carbide heated in a current of carbon monoxide or dioxide yields graphite and lime. Strontium and barium carbides behave similarly. Commercial calcium carbide contains graphite, representing carbon, which has been dissolved by the fused carbide, and separates out as graphite on cooling. The proportion of dissolved carbon depends on the intensity of the current used in the manufacture of the carbide. The temperatures of formation of carbon monoxide and dioxide by the direct union of the elements are influenced by the form of the carbon and the velocity of the stream of oxygen. When a given form of carbon has been repeatedly heated in a vacuum and cooled, the temperature at which it reacts with oxygen is materially changed.

An investigation on the action of carbon and hydrogen on one another at temperatures ranging from 1,000° to 2,800° shows that methane is produced at all temperatures, and that the production of acetylene begins at 1,870°, and continues up to 2,800°. In these experiments the carbon rods were heated electrically, and the temperatures estimated by the Wanner pyrometer. The reduction of water vapour by carbon monoxide takes place at 1,200–1,250°, and equilibrium is established when the volume of hydrogen is double that of the carbon monoxide. Thus—

$$3CO + 2H_2O = 2CO_2 + 2H_2 + CO.$$

In this reaction traces of formic acid are produced. The reduction of carbon dioxide proceeds at 1,300°, and the conditions of equilibrium are represented by the following equation:—

$$CO_2 + 3H_2 = CO + H_2O + 2H_2.$$

These observations explain the presence in volcanic gases of carbon monoxide and dioxide, of water and hydrogen, also of formic acid. It has been observed that carbon dioxide and water vapour react with equal velocity on carbon at 850°, whereas oxygen attains the same rate of reaction at 450°. When the diamond is heated in a porcelain tube in a current of carbon monoxide there is no reaction at 1,000°, but at 1,250° carbon is deposited on the porcelain but not on the diamond. Thus the catalytic action of the porcelain is greater than that of the diamond.

A carbide of boron, B_6C, is formed when petroleum coke and boron trioxide are heated together in an electric furnace. By heating titanium containing some two per cent. of carbon in an electric furnace, with a current of 1,000 amperes at 55 volts, Moissan shortly before his death succeeded in distilling the metal. The distillate consists of minute crystals, and contains some nitride. Iron, chromium, manganese, and tungsten can be distilled in the electric furnace, and from these experiments Moissan estimated the temperature of the sun to be nearer 2,000–3,000° than 6,950°, as estimated by Wilson. Chloroform vapour passed over titanium dioxide heated in a hard glass tube gives the tetrachloride. The action is a complex one. Titanium, titanium dichloride, and trichloride are formed, also a colourless, gaseous hydride, TiH_4.

Tin tetrachloride, but not silicon chloride, can be obtained in a similar way. Titanium silicide, $TiSi_2$, and the corresponding zirconium compound, are formed by heating together powdered aluminium, sulphur, fine sand, and either titanic acid or potassium titanofluoride or the corresponding zirconium compounds. Observations on the autoxidation of tervalent titanium compounds have given the following results:—

Titanium trioxide shaken up with caustic potash and oxygen absorbs more than an equivalent of oxygen. Hydrogen peroxide is formed first, and this converts the trioxide into titanium dioxide, or possibly into pertitanic acid. When baryta is substituted for caustic potash, the hydrogen peroxide formed is retained as such.

Helium in Natural Gas.—Hamilton P. Cady and David F. M'Farland, in the *Journal* of the American Chemical Society, give an account of the examination of some natural gases found in Kansas. In 1903 a sample of a natural gas from a well drilled at Dexter, Cowley Co., Kansas, was examined, and after sparking with oxygen, yielded a residue which was evidently not nitrogen. Further examination of the gas at a later date showed that it contained 1·84 per cent. of helium.

Forty-one samples of natural gas from Kansas and other States have now been analysed, and the presence of helium has been established in all cases but one. It was observed that the amount of helium in the gas tended to increase as the amount of nitrogen increased, but that no direct relation existed between them. The different samples of gas varied widely in composition, the hydrocarbons varying from 15 per cent. to 98 per cent., and helium from a trace up to 1·84 per cent. Nevertheless, in spite of this variation, in the gases from Kansas a regularity was observed in the percentage of helium and total paraffin hydrocarbons along lines running across the State from north-east to south-west, which followed approximately the lines of the outcrop of the geological strata.

Melting-Point of Arsenic.—Arsenic has not a true melting-point, but passes through a viscous state during the transformation from the crystalline solid to the liquid. Arsenic has been heated to temperatures from 400° C. to 1,200° C. in evacuated tubes. Glass was used for the tubes below 700° C., and quartz above this temperature. Above 500° C. the fragments of arsenic soften, stick together, and slowly assume the shape of the containing vessel. The melted portion is distinguished from the solid arsenic by its brilliant steel-gray appearance, the solid being dull black. When all the arsenic is melted, a meniscus slowly appears. About the same proportion of the arsenic is melted by ten minutes' heating at 700° as by twelve hours' heating at 520°.

Fusion is extremely slow at 500°, but at 1,200° it is practically instantaneous. At the latter temperature the interior of the quartz tube became roughened. The conclusion is drawn that at 500° arsenic forms a very viscous liquid, of which the viscosity diminishes with rising temperature.

Parent Substance of Radium.—Otto Hahn, in the *Berichte*, gives a paper on what he believes to be the parent substance of radium. Old specimens of commercially pure thorium nitrate were found to contain relatively large quantities of radium, and the fact that a sample of this salt, nine years old, contained about a hundred times more radium than a freshly prepared sample obtained from the same firm led to the conclusion that there is present in the pure commercial thorium nitrate the substance from which radium is derived directly. That this supposition is correct follows from the fact that the quantity of radium in a solution of recently prepared pure commercial thorium nitrate increased considerably when kept for about six months. An acidified solution of the salt was treated with oxalic acid, and the quantity of radium present in the filtrate estimated. Since this did not increase on keeping, it follows that the parent substance of radium is precipitated by the oxalic acid. This is in accord with Boltwood's statement that the parent substance of radium, named by this author "ionium," is an element which reacts like thorium. From a consideration of the quantities of radium present in samples of thorium nitrate of various ages, the author calculates the disintegration constant of radium to be roughly three thousand years. This is of the same order of magnitude as the value arrived at by Rutherford, and differs considerably from the value obtained by Ramsay and Cameron.

NOTES ON PHYSICS.

BY EDWIN EDSER, A.R.C.SC.

THE BALLISTIC GALVANOMETER (*continued*).

THE ballistic galvanometer may be used in the determination of several electrical magnitudes. In most cases the method adopted amounts to this: a condenser is charged by means of a battery or cell; the battery or cell is then disconnected, and the condenser is discharged through a ballistic galvanometer, and the throw, θ, of the needle is observed. If Q is the quantity of electricity discharged through the galvanometer, T the time of vibration of the galvanometer, and k a constant depending on the structure of the galvanometer, then

$$Q = \frac{1}{k} \cdot \frac{T}{2\pi} \theta.$$

(For proof, see *Practical Teacher* for February 1908.)

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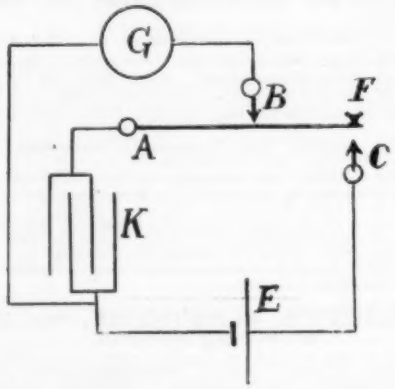
This formula only applies if the vibrations of the suspended system are not sensibly damped. To determine this point, set the suspended system oscillating, and observe two succeeding swings on opposite sides of the zero. If these two swings are equal, there is no sensible amount of damping; none, at least, that need be corrected for in taking ballistic observations. If



each swing of the needle is perceptibly less than the preceding one—that is, if the oscillations die down fairly quickly—a correction for damping must be applied. Let us suppose that on discharging the condenser through the galvanometer, the spot of light moves through a divisions on the right-hand side of the zero, then passes through the zero, and moves through b divisions on the left-hand side. In this case the spot of light would have moved through more than a divisions to the right if damping had been absent; and in order to apply the formula given above, we must be able to calculate what would have been the first throw if damping had been absent. When the damping is small, and b is not less than about 90 per cent. of a, the following reasoning may be employed. From the instant when the suspended system starts to move, to the instant when it reaches the extremity of its first swing, a quarter of the complete period of vibration has elapsed. Between the instant when it reaches the extremity of its first swing, and that at which it reaches the extremity of the succeeding swing on the opposite side of the zero, one-half of a complete period of vibration has elapsed. In this half-period the swing decreases from a to b; hence in the first quarter period the swing will lose $(a - b)2$, so that this gives the correction that must be applied to the observed motion of the spot of light after the discharge of the condenser through the galvanometer. It must be remembered that θ is the circular measure of the angle through which the suspended system turns, and the ray reflected from the mirror turns through twice this angle. As a general rule we are only concerned with ratios of throws or deflections, and in this case the displacements of the spot of light may be read off directly from the scale and inserted in the formula.

Fig. 1 represents the arrangement of apparatus which is generally used for charging a condenser and discharging it through a ballistic galvanometer. ABC is a double contact key. A tongue of metal is fixed at A, and usually presses against the contact B above it. When the end of the key remote from A is depressed by pressing on an ebonite button F, the tongue of metal breaks contact with B and makes contact with C. Now if the condenser K and a cell E are connected in series between A and C, it is clear that the condenser will be charged to the potential of the cell when the key is depressed. If the ballistic galvanometer is connected as shown in Fig. 1, the condenser will discharge itself through the galvanometer when the key is released, and contact is once more made with B.

The key should be depressed for only the shortest possible interval of time, and then instantly released. If it is depressed for long, an extra charge soaks into the condenser, and it is impossible to make adequate allowance for the soakage.

To compare the Capacities of Two or More Condensers.—Connect each condenser in turn as shown in Fig. 1, charge it, and discharge through the galvanometers, a single cell E being used throughout the experiments. Let K_1 and K_2 be the capacities of the condensers, while d_1 and d_2 are the corresponding throws of the spot of light. Then if the E.M.F. of the cell is equal to E, the quantity which is discharged through the galvanometer is equal to the capacity multiplied by the potential E, and we have

$$K_1E = \frac{1}{k} \cdot \frac{T}{2\pi} \cdot \theta_1,$$

$$K_2E = \frac{1}{k} \cdot \frac{T}{2\pi} \theta_2.$$

$$\therefore \frac{K_1}{K_2} = \frac{\theta_1}{\theta_2} = \frac{d_1}{d_2},$$

since the angle of swing of the suspended system is small, and therefore the angle through which the ray reflected from the mirror turns is proportional to the displacement of the spot of light on the scale.

To compare the E.M.F.'s of two Cells.—In this case we use only one condenser, and couple this up first with one and then with the other cell. Let the E.M.F.'s of the cells be E_1 and E_2, while d_1 and d_2 are the corresponding throws of the spot of light; then

$$E_1K = \frac{1}{k} \cdot \frac{T}{2\pi} \theta_1,$$

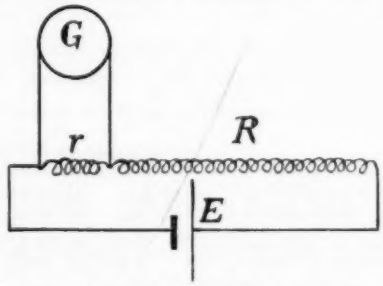
$$E_2K = \frac{1}{k} \cdot \frac{T}{2\pi} \theta_2.$$

$$\therefore \frac{E_1}{E_2} = \frac{\theta_1}{\theta_2} = \frac{d_1}{d_2}.$$

To find the Absolute Capacity of a Condenser.—Connect up as in Fig. 1, charge and discharge the condenser, and observe the first and second elongations a and b of the spot of light; then the elongation corrected for damping is equal to

$$d = a + \frac{a - b}{2}.$$

Let θ be the circular measure corresponding to the elongation d of the spot of light. θ will be proportional to d, but the value



of θ need not be calculated, as we shall finally only require the ratio of θ to another angular deflection, and this ratio will be equal to the ratio of the respective elongations of the spot of light. Now

$$KE = \frac{1}{k} \cdot \frac{T}{2\pi} \theta. \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

Now couple up the cell E in series with a resistance R (Fig. 2) of from 2,000 to 10,000 ohms, and a small resistance r of from 1 to 10 ohms. Connect the galvanometer terminals across the ends of r. Then since r is small in comparison with R, the current flowing through the cell will be practically equal to E/R, and when this current divides, to flow in part through the galvanometer G and in part through the low resistance r, the fraction which flows through the galvanometer is equal to $r/(r + R_1)$ of the whole current, R_1 being the resistance of the galvanometer. Hence current flowing through galvanometer =

$$\frac{E}{R} \cdot \frac{r}{(R_1 + r)}.$$

Now it will be remembered that the constant k which occurs in (1) above is connected with the steady deflection ϕ produced by a constant current C by the equation

$$\phi = kC. \quad \therefore C = \frac{\phi}{k}.$$

Let the steady deflection of the galvanometer in the arrangement represented in Fig. 2 be equal to ϕ. Then

$$\frac{E}{R} \frac{r}{(R_1 + r)} = \frac{1}{k} \phi. \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

Dividing (1) by (2), we obtain

$$K \cdot \frac{R(R_1 + r)}{r} = \frac{T}{2\pi} \frac{\theta}{\phi}.$$

The time of vibration T of the suspended system must be observed. To find θ/ϕ, we divide d (the ballistic throw corrected for damping) by the steady elongation of the spot of light in the arrangement represented in Fig. 2.

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Again: the finances of the country were in a hopeless condition. The extravagant building schemes of Louis the Fourteenth and the costly wars he had carried on saddled the country with a load of debt, which the follies and vices of his successor only increased. More and more taxes were demanded from the peasantry—the class that had no money—to provide luxuries for the lazy and wealthy, and it was little to be wondered at that the former grew desperate.

2. The writings of Voltaire and Rousseau and others had shaken men's belief in the most cherished institutions, and the soldiers who had helped the Americans to win their freedom naturally spread revolutionary ideas at home.

3. The calling together of the National Assembly and the attempts to dissolve the Tiers Etat brought matters to a crisis, and the Revolution commenced.

But the student must remember that the men who commenced the movement, and who commanded a good deal of sympathy in England and elsewhere, had no intention of massacring the aristocracy, beheading the king, and committing the other acts of cruel savagery which are usually associated with the movement. The control of affairs soon passed out of the hands of sensible men into those of a few fanatics, who, backed by the ignorant mob of Paris, committed acts which disgusted the rest of Europe and precipitated a European war.

The results were stupendous. The long Napoleonic wars altered the map of Europe; and although Napoleon was subdued, the *spirit* of the Revolution, the love of freedom and the hatred for unconstitutional rule, permeated the whole range of politics for the next half century, and many countries owe their political freedom to the Revolution against which they fought.

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2. Woollens:—
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   - 1790. Cartwright produced a wool-combing machine, which did much more than hand labour.

3. The demand for machines led to a development of the *iron* industry, and the smelting of iron in time caused an increase in the output of *coal*, rendered possible by James Watt's steam-pumping engine.

4. Power was obtained to run machinery from *water*, but this was naturally an inconvenient and unreliable source, and in 1785 Watt applied his steam-engine to textile manufacturing. This rapidly developed, and notwithstanding the Napoleonic wars and their huge cost, and the antipathy of the people to machinery, steam power soon became the recognised motive force for machinery. *Cutlery and engineering* trades developed in Lancashire and Yorkshire, and earthenware in North Staffs, which, owing to the genius of Wedgwood, soon became *the Potteries*.

5. The increase in manufactures demanded increased modes of transit, and hence we find great improvements in this respect.

(1.) *Roads* were better made, especially after Macadam's system of road making and mending came into vogue.

(2.) *Canals* were made. *Bridgewater*, Woosley to Manchester (carried goods at 6s. a ton, as against 40s. a ton by road); *Grand Trunk Canal*, joining Mersey and Trent; *Grand Junction*, joining the Trunk to London; *Kennet and Avon; Leeds and Liverpool*, etc.

(3.) *Railways.*—The opening of a railway for trucks drawn by locomotive by George Stephenson in 1830 was an immense stride forward.

(4.) *Steamboats*:—
   - 1812. Bell and Symington ran steamboats on the Clyde;
   - 1814. Boulton and Watt began a service from London to Edinburgh;
   - 1830. The *Enterprise* reached Bombay in seventy days; and in
   - 1837. The *Great Western* steamed across the Atlantic.

The subsequent improvements and the electric telegraph have revolutionised our whole system of life.

Results.

1. Growth of large towns and depletion of the country.
2. A sharp line of demarcation between capital and labour.
3. A rapid growth in the population (seven times as fast as in earlier times).
4. An increase in national wealth, which enabled us to meet the expenses of the Napoleonic wars.
5. An ever-increasing demand for reform.
6. The development of commerce and the colonies.
7. The dependence of England for its food supply on other countries.

Revision Questions.

The following questions set in recent papers will be found useful in revising work for examination.

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Geography.

1. How is a cumulus cloud formed? Why are mountain peaks often surrounded by clouds when the rest of the sky is clear?

2. Compare the climate of the west coast of Norway with that of the east coast of Sweden, and the climate of Simla with that of Lahore. In each case explain the difference.

3. Describe, with diagrams, the various conditions which determine the formation of springs.

4. Spring tides at Liverpool rise to a height of about 26 feet, at Bristol to 33 feet, at Greenock to 10 feet, and at Dublin to 14 feet. When high tide occurs at noon at Dublin there is high tide at Liverpool at 12.22 p.m., at Bristol at 8.30 p.m., and at Greenock at 1.18 p.m. Explain why the times and the heights of the tides at these places are so different.

5. Describe briefly the routes of the main lines of railways in Scotland, and show how they have been determined by the physical and economic geography of the country.

6. Describe the geographical conditions which have determined the sites of five of the following places, and mention any other circumstances which have contributed to the importance of each of the five:—Bath, Berwick, Carlisle, Chester, Maidstone, Shrewsbury, Southampton, Waterford.

7. Where are the chief mining districts and the chief agricultural districts in France? What are the products of each district?

8. Draw a map of the Rhine and its tributaries, and mark and name the principal towns on their banks. Give a short account of the commercial importance of the Rhine.

9. Describe the position and point out the natural advantages of the sites of five of the following cities:—Budapest, Cadiz, Constantinople, Ghent, Magdeburg, Marseilles, Rouen, Turin.

10. Give an account of the zones of vegetation in Russia, and state the natural products of each.

11. Describe the position and state the importance of five of the following:—Antioquia, Autofagasta, Asuncion, Callao, Concepcion, Cordoba, Maracaibo, Mendoza, Monte Video.

12. Write an account of the configuration (relief) of the South Island of New Zealand, and show how it influences the rainfall of the country and the occupations of the people.

13. What do you know of five of the following:—Fremantle, Geraldton, Hokitika, Kalgurli, Lake Eyre, Lake Tarawera, Lyttelton, Napier?

14. What are the chief modes of land transport employed in different parts of the world? Give examples of regions in which each of the modes you mention is important, and explain why it is used in preference to others.

15. Describe the positions of the chief fishing grounds of the world, and state the geographical conditions which favour the fishing industry in these places.

16. Describe the chief ways in which the different parts of the British Empire (leaving out India) are governed. Give examples of each.

17. Describe and account for the positions of the chief regions in Asia which suffer from deficient rainfall.

18. Write a short account of the climate and productions of the Deccan. What are the chief reasons for the Deccan being more thinly populated than the northern parts of India?

19. State what you know of the chief religions professed by the peoples of Asia, and describe shortly their distribution.

20. What is Southern Rhodesia? What kind of climate has it? What are its chief towns, and to what ports are they joined by railway?

History.

1. What were the main points of William the Conqueror's policy in regard to (*a*) the barons, (*b*) the Church?

2. Sketch the careers of Stephen Langton and William of Wykeham.

3. Describe the extent of English possessions in France—(*a*) at the death of Henry the Second, (*b*) at the death of John, (*c*) at the Treaty of Brétigny, and (*d*) at the Treaty of Pecquigni.

4. Describe and discuss the attitude of Henry the Fourth and Henry the Fifth to the Lollards.

5. What were the chief constitutional and social effects of the wars of the Roses?

6. What were the effects of the Reformation on Ireland? Describe the state of Ireland under Elizabeth.

7. Trace in outline the fortunes of Charles the First from the time when he became a prisoner at Holmby House till his death, including some account of the negotiations in which he was engaged.

8. Give an account of the relations between England and Holland in the reign of Charles the Second.

9. What were the chief tenets of the Whigs and Tories respectively in Queen Anne's reign? Name some leading men of each party, and show how Marlborough had to work with each successively in the conduct of the war.

10. Compare the younger William Pitt as a head minister with Sir Robert Walpole.

11. Give briefly the circumstances and results of the following battles:—Fontenoy, the Nile, Prestonpans, Wandewash.

12. Mention some indications of the increase of royal power under George the Third. To what causes is this increase to be attributed?

13. Give an account of the attempts to make the transportation of convicts a means of colonisation.

GENERAL INFORMATION PAPER.

Very few complete sets of answers were submitted to last month's questions, and none were sufficiently correct to warrant the awarding of a prize. The following are the answers, not usually given:—

1. *Bey.* A title of rank given in countries under Turkish rule.

Incas. The kings or royal princes of the ancient Peruvians.

Hovas. The ruling class in Madagascar.

Dyaks. The natives of Borneo—the "head hunters."

Pawnees. A race of Red Indians inhabiting the great prairies of America.

Aztecs. An indigenous people of Mexico, who in 1325 founded Tenochtitlan. Montezuma was king when the country was captured by the Spaniards.

Basques. A people of Celtic descent inhabiting the district round the Pyrenees; of kin to the Britons.

3. *Mrs. Grundy.* The personification of propriety. The term is from Tom Morton's *Speed the Plough.* Mrs. Ashfield is very jealous of her neighbour, Mrs. Grundy, and Farmer Ashfield says to her, "Be quiet, wull ye? Always ding dinging Mrs. Grundy into my ears—'What will Mrs. Grundy zay? What will Mrs. Grundy think?'"

Taffy. A Welshman, so called from David, a common Welsh name. David, familiarly Davy, becomes in Welsh Taffed, Taffy.

Uncle Sam. The United States Government. Stores in an American factory were marked E. A., U.S. (Elbert Anderson, United States). One of the employees said U.S. stood for Uncle Sam. The joke took, and the phrase became stereotyped.

Bull. Either a Papal document from *bulla*, a leaden seal, or a speculator on the Stock Exchange who operates to force up the price of stock.

Savoir faire. Knowing what to do in any circumstance; the knowledge possessed by a man of the world.

4. *Coin* is milled or ridged round the edge to prevent clipping or paring down.

5. *Gipsy.* Said to be a corruption of "Egyptian." A band of them appeared in 1418 under the leadership of Duke Michael of Little Egypt.

Milliner. Possibly millaner, from Milaner, a dealer in goods from Milan.

Galvanism. From Louis Galvani of Bologna, who discovered *galvanism.*

Daguerreotype. A photographic process named from M. Daguerre, who improved it 1837.

Cherry. Gk. *cerasos*, a cherry tree, usually said to come from Cerasus, in Pontus.

Panic. A sudden fear, attributed in old times to the river-god Pan.

Tariff. A scale of charges. From Cape Tarifa.

Muslin = Fr. *mousseline.* From Mosul, a city of Kurdistan, whence it first came.

Copper. From Cupros (Cyprus), whence the Romans obtained copper.

Hansom. A two-wheeled cab invented by Mr. Hansom of York.

8. *Genoa.* Christopher Columbus.

Elba. The "empire" of Napoleon during his brief banishment.

Upsala. The home of Linnæus, the great botanist.

Olney. The residence of Cowper for some years.

Geneva. The home of the Reformation; residence of John Calvin.

Abbotsford. The beautiful home of Sir Walter Scott on the Tweed.

Lutterworth. The home of Wycliffe.

Carisbrooke. The scene of Charles the First's imprisonment on the Isle of Wight.

Hawarden Castle. Mr. Gladstone's home.

Eversley. The rectory of Charles Kingsley.

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HELP FOR CERTIFICATE STUDENTS.

ENGLISH.

HAVING dealt with the play of *Richard II.* as a whole, and sketched the character of the king, we must now deal with the other characters, prominent among which stand "Old John of Gaunt, time-honoured Lancaster."

The opening words of the play, together with such expressions as—

"Old Gaunt indeed, and gaunt in being old,"

and—

"Gaunt am I for the grave, gaunt as a grave,"

together with the fact that he dies soon after the play begins, all lead us to look upon John of Gaunt as a very old man; but at the period when the commencement of the play is laid John of Gaunt was only fifty-eight years old. History shows us that John of Gaunt was a man of great ability as a statesman, but he was ambitious and unscrupulous. He had married Blanche of Castile, the daughter of Pedro the Cruel, and in her name had laid claim to the crown of Castile. This led to the Spaniards siding with the French, and brought about the reverses to English arms which marked the close of the reign of Edward the Third. In 1386 he took the English navy and an army of 10,000 men to Spain purely in his own interests, and left the country exposed to very serious risks of a French invasion. On his return in 1390 he endeavoured to bring about a reconciliation between Richard and his uncle, Gloucester, who had taken the lead in reforming the unconstitutional government of Richard. This action was probably not the result of brotherly love towards Gloucester, and his callousness is brought out by Shakespeare in the dialogue between Gaunt and the widowed duchess in Act I., Scene ii. In spite of a most powerful appeal by the duchess, he declines to be her champion against the young king, who had caused Gloucester's death:—

"God's is the quarrel; for God's substitute,
His deputy anointed in His sight,
Hath caused his death: the which, if wrongfully,
Let heaven revenge; for I may never lift
An angry arm against His minister."

In his dealing with his own son he was also callous, but Shakespeare rather infers that his action sprang from a high sense of duty and justice, which led him to stifle his paternal feelings in order to perform with impartiality his duty as a judge:—

"You urged me as a judge; but I had rather
You would have bid me argue like a father.
Oh, had it been a stranger, not my child,
To smooth his fault I should have been more mild."

In the same spirit he strives to stifle his feelings when his son is banished, and he urges him to regard the trouble in the most optimistic light:—

"Teach thy necessity to reason thus;
There is no virtue like necessity.
Think not the king did banish thee,
But thou the king. Woe doth the heavier sit,
Where it perceives it is but faintly borne."

The character of the Duke of York stands out in contrast with that of his brother. Both dukes lament the waywardness of their nephew. York seems thoroughly genuine and sincere, but he is weak; and yet in judging him we must make allowance for the extremely difficult position in which he is placed. His loyalty to the king seems to require that he shall not only justify conduct which his sense of honour leads him to condemn, but shall fight in support of the wrong-doer. Consequently we find him full of a religious loyalty, but realising the weakness of his position, and taking the line of least resistance by declaring that "things past redress are now with me past care." The position is admirably summed up in Act II., Scene iii., lines 152-171:—

"Well, well, I see the issue of these arms:—
I cannot mend it, I must needs confess,
Because my power is weak and all ill left:
But if I could, by Him that gave me life,
I would attach you all, and make you stoop
Unto the sovereign mercy of the king;
But since I cannot, be it known to you
I do remain as neuter."

Yet after this declaration of neutrality he proceeds to offer hospitality to the king's enemies:—

"So, fare you well;
Unless you please to enter in the castle,
And there repose you for this night."

The most despicable character in the play is perhaps Aumerle. He is treacherous throughout. He advises Richard to act treacherously towards his enemies:—

"Let's fight with gentle words
Till time lend friends, and friends their helpful swords."

The first scene of Act IV. furnishes abundant quotations to prove his treason, and later on (V. ii.) his own father is incensed to find from a document in his pocket that he is mixed up in a "dark conspiracy," and that—

"A dozen of them here have ta'en the sacrament,
And interchangeably set down their hands,
To kill the king at Oxford."

We expect something better from a prince of the royal blood, and judge his conduct from a different standpoint from that from which we regard the royal favourites and sycophants—Bushy, Green, and the Earl of Wiltshire. These are aptly described by Bolingbroke as the "caterpillars of the commonwealth," though strangely enough he spoils the metaphor by adding—

"Which we have sworn to *weed* and pluck away."

Shakespeare has drawn the character of Bolingbroke with a masterly hand, but like all real living characters it is a very difficult one to describe. At first our feelings are enlisted on his side, because he is the victim of a harsh and unjust sentence. History tells us that as Earl of Derby he had assisted Richard in his endeavours to establish absolute power, and for this he had been made Duke of Hereford. Nevertheless he was distrusted by the king, and rightly so. He could patiently abide his time and seize his opportunity when it offered, seeing his advantage from afar, but seizing it only when it was well within his reach; humble, crafty, bold, and aspiring; encroaching by regular but slow degrees; building power on opinion, and cementing opinion by the use of power. Richard himself first describes his cousin's character:—

"Ourself and Bushy, Bagot here and Green,
Observed his courtship to the common people;
How he did seem to dive into their hearts,
With humble and familiar courtesy."

He declares to Percy that gratitude is one of his own special characteristics:—

"I thank thee, gentle Percy; and be sure
I count myself in nothing else so happy
As in a soul rememb'ring my good friends;
And, as my fortune ripens with my love,
It shall be still thy true love's recompense."

The way in which Bolingbroke advances his greater claims to the kingdom, though cautiously asserting a claim to nothing more than the dukedom, is extremely well set out. Bolingbroke professes humility and loyalty:—

"Henry Bolingbroke
On both his knees doth kiss King Richard's hand,
And sends allegiance and true faith of heart
To his most royal person."

Richard rebukes his formal courtesy:—

"Up, cousin, up; your heart is up, I know,
Thus high at least, although your knee be low."

At the same time he feels that Bolingbroke has gained the complete mastery:—

"What you will have, I'll give, and willing too;
For do we must what force will have us do.
Set on towards London, cousin, is it so?"

To which the inexorable Bolingbroke simply says—

"Yea, my good lord."

The splendid lines in which York relates the entry of the two cousins into London well illustrate their characters, and the way in which one rose by the fall of the other.

There are many minor character touches in the play that are worth studying and culling. Amongst these we would particularly refer to the gardener who draws so many parallels

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and—

"Gaunt am I for the grave, gaunt as a grave,"

together with the fact that he dies soon after the play begins, all lead us to look upon John of Gaunt as a very old man; but at the period when the commencement of the play is laid John of Gaunt was only fifty-eight years old. History shows us that John of Gaunt was a man of great ability as a statesman, but he was ambitious and unscrupulous. He had married Blanche of Castile, the daughter of Pedro the Cruel, and in her name had laid claim to the crown of Castile. This led to the Spaniards siding with the French, and brought about the reverses to English arms which marked the close of the reign of Edward the Third. In 1386 he took the English navy and an army of 10,000 men to Spain purely in his own interests, and left the country exposed to very serious risks of a French invasion. On his return in 1390 he endeavoured to bring about a reconciliation between Richard and his uncle, Gloucester, who had taken the lead in reforming the unconstitutional government of Richard. This action was probably not the result of brotherly love towards Gloucester, and his callousness is brought out by Shakespeare in the dialogue between Gaunt and the widowed duchess in Act I., Scene ii. In spite of a most powerful appeal by the duchess, he declines to be her champion against the young king, who had caused Gloucester's death:—

"God's is the quarrel; for God's substitute,
His deputy anointed in His sight,
Hath caused his death: the which, if wrongfully,
Let heaven revenge; for I may never lift
An angry arm against His minister."

In his dealing with his own son he was also callous, but Shakespeare rather infers that his action sprang from a high sense of duty and justice, which led him to stifle his paternal feelings in order to perform with impartiality his duty as a judge:—

"You urged me as a judge; but I had rather
You would have bid me argue like a father.
Oh, had it been a stranger, not my child,
To smooth his fault I should have been more mild."

In the same spirit he strives to stifle his feelings when his son is banished, and he urges him to regard the trouble in the most optimistic light:—

"Teach thy necessity to reason thus;
There is no virtue like necessity.
Think not the king did banish thee,
But thou the king. Woe doth the heavier sit,
Where it perceives it is but faintly borne."

The character of the Duke of York stands out in contrast with that of his brother. Both dukes lament the waywardness of their nephew. York seems thoroughly genuine and sincere, but he is weak; and yet in judging him we must make allowance for the extremely difficult position in which he is placed. His loyalty to the king seems to require that he shall not only justify conduct which his sense of honour leads him to condemn, but shall fight in support of the wrong-doer. Consequently we find him full of a religious loyalty, but realising the weakness of his position, and taking the line of least resistance by declaring that "things past redress are now with me past care." The position is admirably summed up in Act II., Scene iii., lines 152-171:—

"Well, well, I see the issue of these arms:—
I cannot mend it, I must needs confess,
Because my power is weak and all ill left:
But if I could, by Him that gave me life,
I would attach you all, and make you stoop
Unto the sovereign mercy of the king;
But since I cannot, be it known to you
I do remain as neuter."

Yet after this declaration of neutrality he proceeds to offer hospitality to the king's enemies:—

"So, fare you well;
Unless you please to enter in the castle,
And there repose you for this night."

The most despicable character in the play is perhaps Aumerle. He is treacherous throughout. He advises Richard to act treacherously towards his enemies:—

"Let's fight with gentle words
Till time lend friends, and friends their helpful swords."

The first scene of Act IV. furnishes abundant quotations to prove his treason, and later on (V. ii.) his own father is incensed to find from a document in his pocket that he is mixed up in a "dark conspiracy," and that—

"A dozen of them here have ta'en the sacrament,
And interchangeably set down their hands,
To kill the king at Oxford."

We expect something better from a prince of the royal blood, and judge his conduct from a different standpoint from that from which we regard the royal favourites and sycophants—Bushy, Green, and the Earl of Wiltshire. These are aptly described by Bolingbroke as the "caterpillars of the commonwealth," though strangely enough he spoils the metaphor by adding—

"Which we have sworn to *weed* and pluck away."

Shakespeare has drawn the character of Bolingbroke with a masterly hand, but like all real living characters it is a very difficult one to describe. At first our feelings are enlisted on his side, because he is the victim of a harsh and unjust sentence. History tells us that as Earl of Derby he had assisted Richard in his endeavours to establish absolute power, and for this he had been made Duke of Hereford. Nevertheless he was distrusted by the king, and rightly so. He could patiently abide his time and seize his opportunity when it offered, seeing his advantage from afar, but seizing it only when it was well within his reach; humble, crafty, bold, and aspiring; encroaching by regular but slow degrees; building power on opinion, and cementing opinion by the use of power. Richard himself first describes his cousin's character:—

"Ourself and Bushy, Bagot here and Green,
Observed his courtship to the common people;
How he did seem to dive into their hearts,
With humble and familiar courtesy."

He declares to Percy that gratitude is one of his own special characteristics:—

"I thank thee, gentle Percy; and be sure
I count myself in nothing else so happy
As in a soul rememb'ring my good friends;
And, as my fortune ripens with my love,
It shall be still thy true love's recompense."

The way in which Bolingbroke advances his greater claims to the kingdom, though cautiously asserting a claim to nothing more than the dukedom, is extremely well set out. Bolingbroke professes humility and loyalty:—

"Henry Bolingbroke
On both his knees doth kiss King Richard's hand,
And sends allegiance and true faith of heart
To his most royal person."

Richard rebukes his formal courtesy:—

"Up, cousin, up; your heart is up, I know,
Thus high at least, although your knee be low."

At the same time he feels that Bolingbroke has gained the complete mastery:—

"What you will have, I'll give, and willing too;
For do we must what force will have us do.
Set on towards London, cousin, is it so?"

To which the inexorable Bolingbroke simply says—

"Yea, my good lord."

The splendid lines in which York relates the entry of the two cousins into London well illustrate their characters, and the way in which one rose by the fall of the other.

There are many minor character touches in the play that are worth studying and culling. Amongst these we would particularly refer to the gardener who draws so many parallels

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between the garden and the state, some of which are particularly appropriate to the disordered condition of the country under Richard, as—

"Go, bind thou up yon dangling apricocks,
Which, like unruly children, make their sire
Stoop with oppression of their prodigal weight."

And again :—

"Why should we, in the compass of a pale,
Keep law and form and due proportion,
Showing, as in a model, our firm estate,
When our sea-walléd garden, the whole land,
Is full of weeds, her fairest flowers choked up,
Her fruit trees all unpruned, her hedges ruined,
Her knots disordered, and her wholesome herbs
Swarming with caterpillars?"

Another touching little piece is the dialogue between the deposed king and his groom, in which both master and man show their affection for the king's horse :—

Groom. Oh, how it yearned my heart, when I beheld
In London streets, that coronation day,
When Bolingbroke rode on roan Barbary,—
That horse that thou so often hast bestrid,
That horse that I so carefully have dressed!
K. Rich. Rode he on Barbary? Tell me, gentle friend,
How went he under him?
Groom. So proudly as if he disdained the ground.
K. Rich. So proud that Bolingbroke was on his back!
That jade hath eat bread from my royal hand;
This hand hath made him proud with clapping him.
Would he not stumble? would he not fall down,—
Since pride must have a fall,—and break the neck
Of that proud man that did usurp his back?

The following questions, taken from literature examination papers, will suggest points that the student will be able to prepare from the text and the ordinary books of reference :—

1. What period of the reign of Richard the Second was chosen by Shakespeare for dramatic treatment? When was Shakespeare's play of *King Richard II.* first published? Account for, and discuss as fully as you can, the difference in the fourth Act between the play as first published and as published after the death of Elizabeth.

2. Point out in Shakespeare's *Richard II.* some of the more noticeable variations from exact historical fact in dealing with the sequence of events or in suggestion of the age of any person represented in the play.

3. Contrast the characters of Richard and Bolingbroke, and compare those of Richard and Henry the Sixth, as exhibited to us by Shakespeare. Describe the entry of Richard and Bolingbroke into London. Mention any additional facts from history that illustrate their characters.

4. Give a *brief historical* sketch of the circumstances of the deposition of Richard the Second. What accounts are there of the manner of his death?

5. Assign to the speakers, and explain clearly the allusions in, the following passages :—

(1) That he did plot the Duke of Gloucester's death (I. i. 100).
(2) Since last I went to France to fetch his queen (I. i. 131).
(3) Edward's seven sons, whereof thyself art one (I. ii. 11).
(4) We are enforced to farm our royal realm.....
Our substitutes at home shall have blank charters (I. iv. 45).
(5) My lord, my answer is—to Lancaster (II. iii. 70).
(6) What seal is that that hangs without thy bosom? (V. ii. 56).
(7) Nor the prevention of poor Bolingbroke
About his marriage (II. i. 167).

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IV. Grape-Sugar.

A. *Preparation.*—Recall the lesson on starch, in which it was shown that when starch is boiled for about four hours with dilute sulphuric acid it forms dextrose, a sweet substance found in grapes, and hence called "grape-sugar."

B. *Presentation.*—Grape-sugar is found in many fruits and other parts of plants, and is formed from starch, which we found was built up in the leaves of plants under the influence of sunlight. Our experiments showed that after a time the starch which was formed in the leaves became converted into a soluble substance, which flowed away to other parts of the plant. The conversion of starch into sugar was also shown in the case of germinating seeds—commercially, in the process of making malt.

When in dilute solution grape-sugar is readily acted upon by the yeast plant, and the process known as *fermentation* leads to the conversion of the grape-sugar into alcohol and carbon dioxide. The yeast plant is a one-celled organism which floats about with the dust in the air, and on coming into a suitable medium readily multiplies and leads to fermentation. There are, of course, other germs that float about, and which would produce different changes. Hence in the preparation of alcoholic liquors great care is taken to exclude objectionable germs, while introducing a small quantity of pure yeast.

Wine is prepared by fermenting the juice of the grape. Many other fruits contain grape-sugar, but they are not suitable for the manufacture of wine, because they contain acid substances which cannot be easily extracted. The acid substance found in the grape-juice, however, is insoluble in alcohol, and as the alcohol is produced during fermentation this acid substance is precipitated. In its crude state it is known as "argol," and when purified it is known as hydrogen potassium tartrate, or cream of tartar, from which tartaric acid is obtained.

Beer is prepared by infusing crushed malt and fermenting the sweet liquid.

When bread is made a small quantity of the starch is turned into sugar, and this ferments under the action of the yeast, and the little bubbles of carbonic acid gas produced expand with the heat and so make the bread light. The alcohol which is formed at the same time passes away as vapour during the baking. In olden times, and still in places where brewer's yeast cannot be obtained, *leaven* is employed to bring about these changes. Leaven is simply a piece of dough kept in a warm and moist place so that yeast plants may grow in it. When people bake once a week, they put by a piece of the dough from one week's baking to serve as leaven for the next.

C. *Formulation.*—Grape-sugar, called also dextrose and glucose, is formed by starch, by diastase, or by boiling with dilute acid. It is converted into alcohol and carbonic acid gas by the action of yeast. The process is called fermentation.

D. *Association.*—Show the commercial importance of the change in the manufacture of wine, mead, and other alcoholic liquors, and in the preparation of bread.

E. *Application.*—Add a little yeast to a liquid containing glucose, and keep it for some time in a warm place. Note how it froths up, giving off bubbles of a gas which will turn lime-water milky. If the remaining liquid is put into a retort and a small quantity is distilled over, iodoform will be produced on the addition of iodine and potash. This proves the presence of alcohol.

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